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ABSTRACT

Findings are reported in the form of abstracts of the 201 research studies which met the criteria for selection. These were chosen from over 1,000 studies identified initially as a result of a comprehensive search of 600 journals and periodicals, as well as individual, organization and employer research, both published and unpublished. Abstracted studies are categorized under one of three topical headings: 1) the individual; 2) the career planning and placement center; and 3) the employer. The findings provide a perspective of the most important experimental and survey research done in career counseling, placement, and recruitment, and identify areas where further research is needed. Each abstract contains: 1) a statement of the research problem; 2) a description of methodology; 3) results; and 4) comments as to strengths, weaknesses, and contributions of the research. (Author/TL)

ED 063536

Review of Research:

Career Planning and Development, Placement, and Recruitment of College-Trained Personnel

Sponsored by the CPC Foundation and the Midwest College Placement Association

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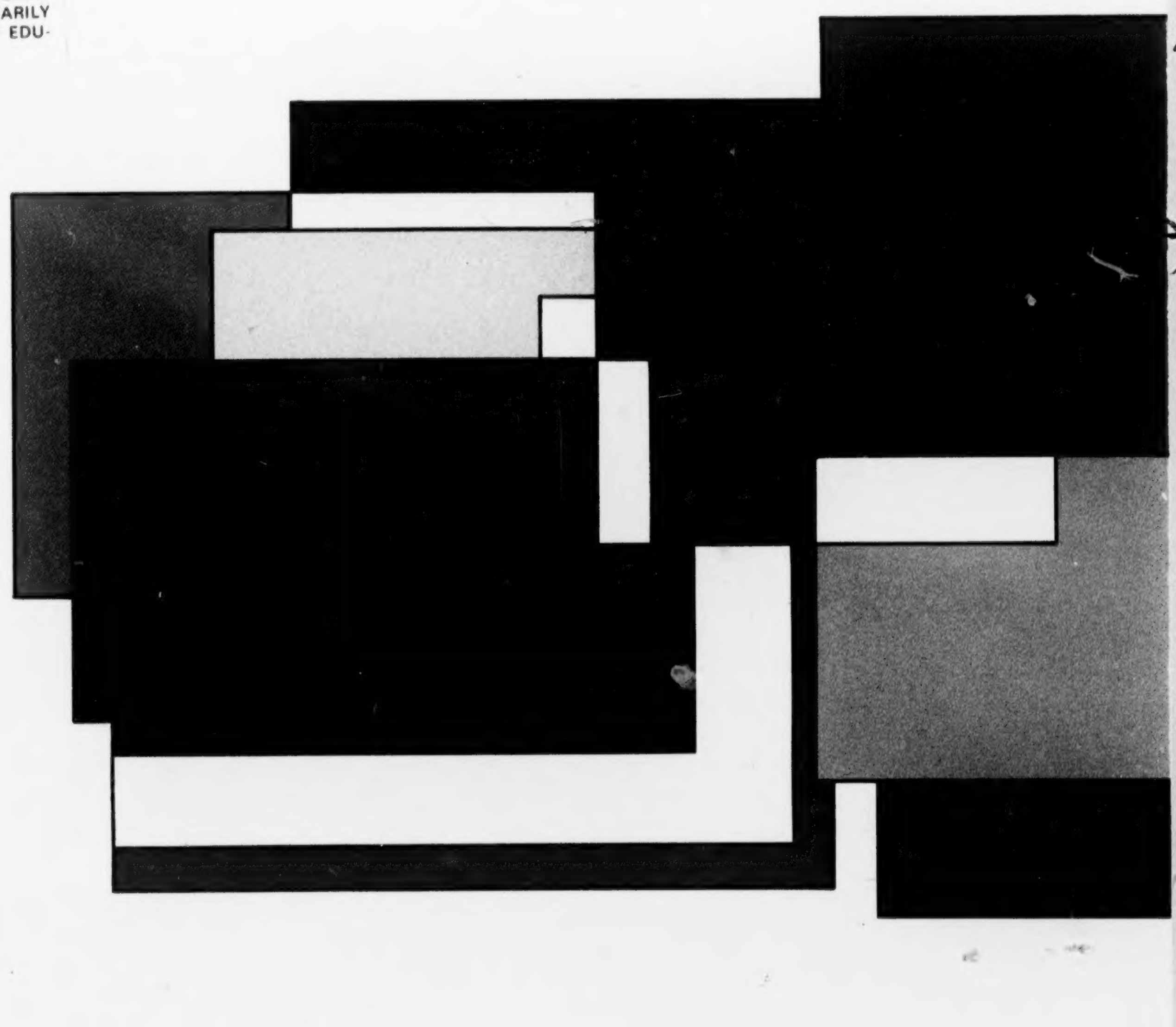

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By J. L. Windle, Adrian P. VanMondfrans, and Richard S. Kay

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Introduction

THE NEED FOR MEANINGFUL research in the areas of career planning and development, placement, and recruitment of college-trained personnel has become evident. Research committees have been established by numerous professional organizations to study these areas. In addition, extensive research has been undertaken in educational, governmental, and industrial settings to determine important variables which influence career interest, selection, persistence, and success.

As a result of the increase in research activity, numerous studies have been done with as many different aspects and variables as there are opinions and questions. Undoubtedly, these studies have contributed to the understanding of the dynamic and complex nature of career planning and development, placement, and recruitment. However, there comes a point in time when any profession must stop to examine some fundamental questions: Where has scientific inquiry taken us? What pertinent questions need to be answered? How sound, empirically or intuitively, are the answers that have been found?

Purpose

It was for these reasons that, in February 1970, this project was undertaken by the authors. Supported by the CPC Foundation and the Midwest College Placement Association, the objective was to develop a publication based on a systematic review of the research literature in the areas of career planning and development, placement, and recruitment of college-trained personnel. The aim of the publication is to stimulate further research and utilization of the results of existing research.

Development

The development of the publication was broken down into several basic steps. Guidelines were established and used for the identification, selection, review, evaluation, and classification of relevant research studies. The guidelines included a specific topic, time period, content, and sources.

General Topic. The general topic was limited to career planning and development, placement, and recruitment of college-trained personnel. For the purpose of the project, "college-trained personnel" was defined as those individuals enrolled in or graduated from a bachelor's, master's, or doctoral program.

Time Period. January 1964 through December 1969 was selected as the time period for published and selected unpublished studies except studies conducted by employing organizations. The time period for employer studies was January 1960 through December 1969.

Content. The content was limited to experimental research including survey research. Thus, fact-finding studies (i.e., studies from which inferences cannot be made) were not included. In general, a study was included if any trust could be placed in it (i.e., if its research methodology appeared to be adequate and its results plausible). If a seemingly important question had only been examined by an inadequate study, the study was included. In addition, if knowledge could be gained from a study which has used (or misused) a particular instrument, statistical analysis, etc., the study was included.

Sources. The sources from which pertinent studies were sought included university libraries; indexes; companies; associations, bureaus, centers, commissions, and offices (representing such areas as consulting, education, placement, professional organizations, and research). Approximately 150 studies were obtained from 315 companies and 50 organizations which were contacted. In addition, abstracts, journals, and periodicals which typically contain articles pertinent to the general topic were used. (Refer to the Appendix for additional information on the sources used.)

Review and Evaluation. From over 1,000 studies which were identified, only 201 met the selection criteria. These were reviewed and evaluated and the results presented in the form of a research abstract, including the following areas:

1. A statement of the research problem. In many cases, the problem had to be determined from the content of the report of the study.

2. The author and title of the study and the date of publication. Some companies requested that their studies be kept anonymous, and their studies were so identified. In addition, a few company studies did not contain a date. Since companies submitted only studies which were conducted since 1960, those without a specific date were identified as "recent."

3. A description of the research methodology used in each study. This was broken down into three areas: the population and sample; the techniques employed to collect and record data; and the research design and statistical analysis used. In general, if adequate information concerning one or more of these areas was not provided in the report of a study, a statement to this effect was noted in the abstract.

4. The study's results and a discussion of them. For some studies only the results which appeared to be most relevant to the research question were

included. In general, lengthy results were summarized. Discussion of the results was limited to discussion contained in the report of the study.

5. Comments by the research staff about each study. In a few cases little or nothing could be gained by providing comments and so none were given. Typically, the comments included the strengths and weaknesses of the study and its apparent contributions. In addition, suggested research questions (problems or topics) for further research were provided. In most cases the comments and suggestions were based on a journal article or periodical article and not on a complete report of the study.

6. Classification of the studies. After the abstracts were developed, they were classified into categories and arranged into a cross-indexing system for inclusion in this publication.

There are three major categories: the individual, the career planning and placement center, and the employer. Subcategories are repeated under each of the three major categories in many cases. This technique permits a meaningful classification of the studies and at the same time minimizes the need to classify them into so many categories that the classification becomes unmanageable. In addition, the flexibility provided by this technique permits classification of a study in more than one category, thus utilizing a study to its fullest extent.

Publication Objectives

Several important objectives have been achieved in the publication. First, the completed research in the areas of career planning and development, placement, and recruitment has been reviewed and put in perspective. It can now be built upon without unnecessary duplication.

Second, the publication systematically identifies what research needs to be done. As previously noted, the comment section of each abstract includes suggested research questions (problems or topics). In total, the comment sections contain over 100 questions for further research.

SUMMARY OF THE FINDINGS

The Individual

More of the studies reviewed were classified under the general title of the individual than under the other two titles. One overwhelming feature of these studies was that they did not fit together in one, or even several, general patterns. Even when several studies were concerned with a common problem, it was difficult to relate and synthesize their findings because of the differences in the subjects sampled, the measures used, and the procedures employed.

The following general statements represent an attempt to identify variables and relationships which are or may be important in understanding the individual, how he chooses his occupation, and why he succeeds or fails. To bring a semblance of order to this summary it is organized around these three questions: What are the variables related to the selection of a college major? What are the variables related to the selection of a career? What are the variables related to the selection of a particular position? Each question discusses considerations of changes, satisfaction, and success.

Several characteristics of individuals appear to be related to college major. Among these are personality, ability, and interest variables. Some of the most promising personality variables are needs, cognitive style, impulsivity, and creativity. In general, little is known about the relationship of personality variables and college majors. It seems reasonable to suppose that educational preference would be related to personality. In addition, the interaction of personality variables and other characteristics of the individual, such as ability or interests, needs more investigation.

In some settings the relative achievement or ability level of an individual is related to the likelihood that he will choose science as a major. There is evidence that other similar relationships exist between ability and college major. In addition, there appears to be an interaction between ability and interests. Average-achievers and over-achievers tend to have more specific vocational interests than under-achievers. This finding is interesting when considered in the light of the usefulness of interests as measured by the Strong Vocational Interest Blank to differentiate among groups of students in a variety of majors. In addition, an individual's college major and vocational interests tend to be related.

To go full circle, back to personality, consistency in educational and vocational interests is associated with a well-adjusted personality. While much more could be said about each of the variables mentioned, it should be clear that the interrelationships among these variables are complex. This leads to the suggestion that more complex correlational models need to be employed to investigate these interrelationships. Furthermore, other uninvestigated variables may be involved.

Performance and persistence in a college curriculum are affected by personality, aptitude, and biographical variables. Students who have decided upon a curriculum differ from students who are still unsure about their ability, drive, academic orientation, and other variables. In general, students who have decided on a curriculum perform better and are more likely to persist. The earlier the decision is made the greater the effect.

External variables also affect the choice of a college major. These include the status ascribed to various professions and their associated curricula, significant other persons, and socioeconomic status (SES) variables. Students from high SES families tend to select curricula leading to status professions. Notable exceptions are the tendency of lower SES students to select engineering and teaching as professions. Both these professions are ascribed relatively high status. The expectations and examples of parents as well as parent-child relations also affect choice. Other significant personal and interpersonal relationships may be identified.

Again, the large number and possible interactions of the variables involved suggest the need for more complex models in investigating the influences on the choice of a college major.

The variables affecting the choice of a career or vocation are similar to those affecting the choice of a college major. The personal characteristics which have been demonstrated to affect career choice can be described as personality, attitude and interest, and biographical variables. There is evidence that the characteristics of the career chosen tend to be consistent with the needs and self-concept of the individual. Different careers appear to require, or to be perceived as requiring, different personality patterns.

Indeed, career groups can be differentiated on the basis of life goals and needs, as well as interests. At present, prediction systems using these variables to determine career choice are not as accurate as one might desire. The measurement of needs and life goals, and to a lesser extent interests, leave much to be desired in both quality and breadth. Better prediction will require better measures.

In addition, several of the relationships found between personal characteristics and career choice appear to be influenced by other variables. That is, the relationship holds only for subjects of high ability or high self-esteem and not for subjects of low ability or low self-esteem. Interactions involving such variables go unnoticed when simple correlation is used.

External factors also affect career choice. SES, the expectations and models of significant other persons, and the characteristics of the careers are variables of interest. The career choice of males is affected by the SES and career choice of their fathers. Even when the career chosen by the son is not the same as that of his father there is a tendency for his choice to be similar, that is, to be in a related field or at a similar level with respect to educational requirements and status.

Satisfaction with and perseverance in a career also appear to be more affected by intrinsic factors. Once a career has been selected, the individual is not likely to change. Changes which do occur are usually to related fields and result in a closer match between the personal characteristics of an individual and the intrinsic characteristics of the career. For example, engineers who become managers tend to be more like other managers rather than like engineers who remain in engineering positions.

After the general choice of a career has been made and the educational preparations have been finished, the individual selects a particular position with a particular company. As mentioned earlier, in connection with selecting a career, the most important aspects of a particular position with respect to choice are intrinsic factors.

The most important intrinsic factors include the type of work performed, opportunity for advancement, opportunity for personal development, and amount of challenge. Ability influences the degree of importance of these factors, with high ability individuals being influenced to a greater extent. Low ability individuals tend to emphasize extrinsic factors such as security, salary, and location to a greater extent than high ability individuals.

However, when reasons for rejecting an offer from a company are listed, extrinsic factors such as salary, location, and time elapsed before an offer is made are frequently included.

Performance on the job is affected by many variables, and the effects of most of these variables do not appear to be simple. For example, ability influences the effect of attitude on job performance, with positive attitudes toward a job affecting performance in high ability managers but not in low ability managers. Other variables such as personality variables, interests, and biographical variables affect success. Successful salesmen have different personalities, interests, and histories than successful engineers or research scientists.

It appears tempting to identify successful people in a variety of occupations and describe their characteristics. One would then select potential employees or counsel students in choosing majors and careers on the basis of the similarity of their characteristics with those of successful people in other occupations. This is the general approach used in the development of the Strong Vocational Interest Blank. It appears to have worked in the case of interests. However, the prospect of following such a procedure for each of the variables which may be important to success appears overwhelming. Yet, many of the present attempts to gain the ability to predict choice, success, and satisfaction in careers or to understand the dynamics of choice are not adding to existing knowledge to any great extent.

Because of the apparently complex interrelationships among the variables related to the choice of a college major, a career, and a position, more complex statistical models need to be used. Models using "moderator" variables or involving nonlinear terms may be useful. In addition, more variables need to be investigated in one study than has been the case in the past so that possible interactions among variables can be ferreted out.

Questions of causality or functional relationships are best answered by studies using manipulated variables. It is difficult to tease out causal relationships from correlational data. More manipulative studies might clarify the picture.

Finally, the studies reviewed do not fit together. It is difficult to assemble a complex puzzle when the pieces are made without regard for each other. Models, paradigms, and theories are needed to lend direction and coherency to research in this area. Decisions concerning which variables are important to include in a study and which are not important are best made on the basis of a theory or model. Indeed, models and theories would not only suggest which variables are important to study, but also they would suggest the nature of the interrelationships among variables. Perhaps enough variables have been identified as important and enough interrelationships have been described to allow more theory building.

The Career Planning And Placement Center

Of the three major categories included in the research review, there were fewer studies dealing directly with the career planning and placement center than for either of the other two.

The limited number of studies on the center consisted predominately of surveys seeking descriptive information on a variety of topics. Due to the nature of this type of research, it is difficult to discuss variables and relationships.

The bulk of the studies seemed to cluster around such factors as student use of the center, student satisfaction with services provided, functions of the center (maintaining student files and disseminating counseling information), and why one becomes a placement officer.

There is evidence that many students do not use the services provided by the center. And, in fact, the center may not be serving the students who need help the most. For example, there are indications that high academic ability students use the center more than low ability students. This may imply that low ability students receive little assistance or encouragement from the placement center, thus they discontinue using its services. If this is the case, techniques need to be developed for identifying and seeking out these students so that they can be helped. This problem has not received adequate investigation.

Generally students are satisfied with such services as interviewing arrangements, availability of recruitment literature, and the scheduling of employers. On the other hand, students are not satisfied with the way the placement office handles career guidance and job counseling. In addition, students are not happy with their orientation to the placement program or the publicizing of the program. Students mainly perceive the function of the placement officer as "matchmaker" between student and job. Implications are that efforts should be made to improve the orientation to the placement program, the image of the placement officer, and the career guidance and job counseling services. Further study should be made to determine how the career guidance and job counseling services offered by other offices on campus might be effectively coordinated with the placement center.

One function of the center has traditionally been the maintenance of the student placement file. The file has included biographical data, grades, letters of recommendation, and other related information. Both employers and placement officers agree that biographical data are the most important part of the file, followed by educational history and work experience. They do not agree as to the importance of grades. Employers consider grades to be a more important part of the file than do placement officers.

Even more significant perhaps is the finding concerning the over-all importance of the file. Far more placement officers than employers feel that it is very important. Since the file generally requires considerable time and money to maintain, further study should be made to determine if it should be discontinued or modified.

Various techniques such as the use of handout material and tapes for disseminating preliminary counseling information have been studied. Results suggest that such techniques can be effective. The implications are that the placement officer may be relieved of some menial tasks, giving him more time for counseling. Although these and similar techniques seem to hold some promise, more extensive research is necessary before their benefits can be fully known.

The most frequently cited reason for becoming a placement officer is "simply by chance." This reason is supported, in part, by the finding that the median age for entering the field is about 25 years. These limited findings imply a need for earlier identification and training, perhaps at the undergraduate or graduate student level, of interested persons before they become "accidentally" involved.

There appears to be little research on either the placement and career planning center or its staff. This includes such areas as role, function, standards, preparation, and evaluation. In addition, there is little recent research reported in the literature on occupational and career information or on individual and group guidance and counseling.

There are numerous studies which deal more indirectly with the center. These studies examine such areas as testing, measurement, and prediction. A complete review of these and other related studies is provided in this publication.

The Employer

Several variables are related to the selection of college graduates for employment. Among these are the on-campus interview, the interviewee (student), the interviewer (recruiter), college grades, biographical data, psychological tests, and the employment resume. These are further affected by the interaction between the student and the recruiter.

There is fairly strong agreement between both interviewee and interviewer that the primary purpose of the on-campus interview is to determine what kind of person the interviewee is. However, the topics most commonly covered by the interviewer include promotion opportunities, company training program, company history, and fringe benefits. It seems that the structured type of interview typically used and the topics most frequently discussed are not in keeping with the agreed purpose of the interview.

The validity of such common selection factors as ability to communicate orally, enthusiasm, motivation, aggressiveness, initiative, and confidence have been questioned. It seems doubtful that such factors could be adequately evaluated in a short, and in some cases, interviewer-dominated interview.

There is some evidence that there is a relationship between being accepted by the interviewer and such variables as preparing for the interview (by reading company literature), being yourself, knowing your interests and objectives, and making a good impression (being on time, neat, and appropriately dressed).

Although it seems reasonable to suppose that the interaction between the personality of the interviewer and the personality of the interviewee might affect the outcome of the interview, this interaction has not been adequately investigated.

Also lacking is research on the importance of the interviewee's physical appearance and stature. Some findings indicate that these variables are important when selecting applicants for certain sales positions, especially positions dealing with industrial goods. It seems that similar results may exist for such positions as first-line supervision and labor relations. Appearance (handsomeness) has been found to correlate with number of visit offers and number of employment offers received by business majors.

There is evidence that several variables are related to how favorably a recruiter describes his company. These variables include the function of the interviewer, his seniority, his age, and his employing industry. It appears that favorability of a description does correlate with the interviewer's age and seniority. However, the favorableness of a description may not be as important to the future satisfaction of the interviewee as an accurate or realistic description.

Even though the problems related to the manipulation of variables associated with the employment selection process are apparent, more experimental studies need to be conducted relevant to the on-campus interview. Most of the present studies are of a survey nature and are limited to a description of such topics as the amount of time the recruiter spends in campus recruiting, number of campuses visited, number of students interviewed, what recruiters do during the interview, etc.

The need for more adequate research is especially critical in light of the on-campus interview. If an interviewee is rejected as a result of the on-campus interview, he does not proceed any further in the employment selection process; i.e., he is not extended an invitation to visit the company. The need for adequate research is further emphasized by findings which indicate that many interviewers make a decision within the first 15 minutes of a 30-minute interview. In addition, interviewers are only confident in their decisions about 60% of the time.

College grades are the primary employment selection criterion, followed by work experience and extra-curricular activities. The importance of the last two variables is dependent upon college major. That is, work experience is more important for engineering majors than extracurricular activities. The opposite is true for business majors.

However, in some cases personality may be the most important factor. The importance of personality is dependent on the type of college major, position, and employer. Evidence indicates that the importance of grades decreases in the interview situation and the importance of personality increases. Nevertheless, students with the highest grade point averages have a higher ratio of job offers to interviews and receive higher salary offers than other students.

Few employers appear to use biographical data as a selection factor. Psychological tests are used but generally are limited to filling positions in sales and finance. Even with the inherent limitations of the interview, findings suggest that its validity may be equal to, or greater than, the validity of psychological tests as a selection device.

As noted, additional investigation on the interaction between the interviewer and the interviewee is warranted. The need for this investigation is further supported by findings which indicate that agreement on decisions among interviewers is about three times greater when selecting applicants from resumes than when selecting applicants from on-campus interviews. Of course, variables such as self-expression and personal appearance come into play during an on-campus interview and thus may affect its outcome. However, the interaction between the interviewer and the interviewee is perhaps a more significant variable.

The variables affecting job success are similar to those affecting the selection of college graduates for employment. The predictor variables typically used in studies on success include college grade point average (GPA), extracurricular activities, leadership experience, employment while in college, psychological test scores, personality, and interest. The most frequently used criteria of success are promotion and salary.

The predictor variables demonstrated to be positively related to promotion and salary (success) are college GPA and aptitude test scores. Since aptitude is highly correlated with GPA, it is not surprising that it too was found to predict success.

In most cases, achievement in extracurricular activities must be substantial if it is to have any effect on later success. Present evidence suggests that employment while in college has no effect on success.

If the present criteria of job success (promotion and salary) are indeed valid, then perhaps the use of GPA to select college graduates for employment is valid. But it would seem that other, and perhaps better, criteria and predictor variables may exist.

The variables associated with job turnover among college graduates are consistently found to be uninteresting or unchallenging work and lack of opportunity. Monetary reasons are not a major factor in turnover.

In general, those who change employers tend to be more aggressive and self-confident and have a past history of substantial campus leadership and activity. It is interesting to note that these are some of the same characteristics of high performers. They are also some of the factors used in selecting college graduates for employment. Thus, these findings have stronger implications for improved utilization of college graduates than for improved selection.

Overview of the Research

It is apparent that, although considerable research has been done on various areas of career planning and development, placement, and recruitment of college-trained personnel, important research questions relevant to these areas have never been satisfactorily answered. In many cases, this has resulted from an inadequate identification of the problem and from the lack of appropriate research methodology.

It would seem that some additional research should be centered on some of the areas which have already been identified as important enough to warrant investigation. In addition, little or no attention has been given to such areas as the disadvantaged (physically handicapped and minority groups); role and function of the placement center and staff; standards for and preparation of staff; and women in the work force. Perhaps the most obvious type of research missing in the field is experimental research; i.e., research in which there is manipulation of variables. There is an overabundance of survey research.

When considering further research, it should be noted that the present research in the field seems to be fragmented. It lacks the direction and theory necessary to tie things together. Also, many studies have been completed which are only minor variations of other studies. While some well-conceived studies have been done, there are many others which apparently have been done with little or no forethought.

Format, Contents, and Use of Research Abstracts and Indexes

Research Abstracts

This section contains an abstract of each study with information arranged as follows:

1. Title of study
2. Author and date of publication
3. Research methodology
   a. Population and sample
   b. Instrumentation and data
   c. Design and analysis
4. Results and discussion
5. Comments
   a. Strengths and weaknesses of study
   b. Apparent contributions
   c. Suggested research questions (problems or topics) for further research

The abstracts are classified by subject within three major categories. They are then further classified in subcategories repeated, where appropriate, under each of the three major categories. Finally, the abstracts are arranged alphabetically by author under each subcategory.

Index by Subject Classifications

This index classifies by major subject area and subcategories all abstracts included in the publication. Additionally, those studies with data covering more than one subject area are cross-referenced under other appropriate major and subcategories. All entries are then arranged alphabetically by author within categories.

The index provides the information normally found in a bibliography; i.e., author, title, date of publication, and source, together with the abstract number and page number on which the abstract appears. Studies designated as "Study A" or "Study B" indicate that more than one study was reported in a single journal article.

The subject classification and the inclusion of the cross-reference feature, plus the bibliographical information, give the user a condensed but complete overview of all studies in the publication in any subject area.

Index of Authors

All studies contained in the publication are listed in the Authors Index alphabetically by author. Where a study was conducted by more than one individual, only the primary author appears alphabetically; however, co-authors are included in that entry.

Also provided in this index are the abstract number and the page number on which the abstract appears, thus permitting easy referral to the Research Abstracts Section and to the Index by Subject Classifications.

The Individual

CAREER CHOICE, PLANNING, DEVELOPMENT

CHOICE

1.

Attrition and the Student Who Is Certain

Abel, W. H. (1966)

Is the attrition rate of students, stratified on the basis of academic achievement, related to the certainty with which these students describe their vocational and/or academic goals?

POPULATION AND SAMPLE

The sample included the entire population of male students who entered a liberal arts college in September 1959 as freshmen and who completed at least one quarter of a year of academic work. The study used a total of 89 students (67 new students and 22 transfer students who had not more than one academic year at other institutions).

INSTRUMENTATION AND DATA

A statement of vocational and/or educational plans was taken from each student's admission file. Four judges divided the statements into a dichotomy of "certain" and "uncertain." Agreement by 3 of the 4 judges was reached for 96.6% of the cases. Unanimous agreement between judges was reached for 76% of the cases.

The student's records were also used to obtain his first-year grade point average (GPA) which was used as a measure of achievement and to determine status (dropout or graduate). Students having a first-year GPA less than 2.00 (on a 4-point scale) were classified as "low." Students above 2.00 were classified as "high."

DESIGN AND ANALYSIS

Attrition before graduation was selected as the dependent variable since graduation is a goal shared by the institution and the student.

The design of the study utilized four cells: high-certain, high-uncertain, low-certain, and low-uncertain.

To study the rate of attrition, a comparison was made between the distributions of students as freshmen and the students who graduated. The test of equality of two proportions was used.

The mean GPAs for the low performance groups were compared. The *t* test was used to test the significance of the difference between the two means.

RESULTS AND DISCUSSION

1. The rate of attrition in the low-certain cell (75%) was more than twice the average rate of attrition for the other three cells (37.1%). The test of equality of two proportions was highly significant ($P = .0028$). In view of this finding, the two groups with low GPAs were compared to determine if initial performance could account for the difference in attrition at that level. The *t* test of the difference between group means was not significant.
2. When reviewing this study, keep in mind that the population used is small and the college involved is a small liberal arts college, so at best the results are applicable only to highly similar campuses.

COMMENTS

The description of the sample seems to contradict itself. Are transfer students with possibly one year of academic work at another institution plus at least one quarter of work at the institution where the sample was taken, similar to freshmen with only one quarter of college work? If they are similar enough to be included in the study, the definition of students should not include "freshmen." If they are not similar enough, then the validity of the study is doubtful.

The author of this study appears to consider career goals and educational goals as equivalent, or highly similar concepts because he talks about "certainty" as the variable under study in terms of either one of these concepts. This is questionable.

2.

Influence of High School Vocational Agriculture on the Matriculation, Graduation, and Employment of Agricultural Engineering Graduates From the Iowa State University of Science and Technology

Ahrens, D. L. (1966)

What is the influence of high school vocational agricuture on the matriculation, graduation, and employment of agricultural engineering graduates?

POPULATION AND SAMPLE

Data were collected from 419 graduates in agricultural engineering from Iowa State University during the period 1942 to 1964. Of this number, 112 graduates had completed at least three or more semesters of vocational agriculture in high school. This group was compared to 112 of the remaining graduates who had not taken vocational agriculture in high school. This reduced the sample size to 224.

INSTRUMENTATION AND DATA

A questionnaire was developed to determine how many semesters of vocational agriculture the student had taken in high school, who or what was the strongest influence in urging him to go to college, at what period in his life did he become aware of agricultural engineering as a profession, and what was the first major he had selected in college.

DESIGN AND ANALYSIS

The original group of 419 graduates was reduced to 112 who had taken vocational agriculture in high school and 112 who had not. Information was gathered from these remaining 224 students, and percentages were computed to compare the two groups and to summarize findings.

RESULTS AND DISCUSSION

1. A higher percentage of vocational agriculture graduates indicated that going to college was their own idea—27.6% as opposed to 14.3% for the non-vocational agriculture graduates.
2. A lower percentage of vocational agriculture graduates were influenced by their parents to go to college—31.3% as opposed to 47.2% for the non-vocational agriculture graduates.
3. High school counselors had little influence on either group—0.9% for both groups.
4. The vocational agriculture graduates became aware of the agricultural engineering profession earlier than did the non-vocational agricultural graduates. Forty-seven percent became aware during their high school years, as opposed to 33.0% of the non-vocational agriculture group.
5. Sixty-five percent of the vocational agriculture graduates selected agricultural engineering as their initial college major, as compared to 54.5% of the non-vocational agriculture graduates selecting this major initially.

COMMENTS

While agricultural engineers who had high school vocational agriculture differ from those who did not, in terms of patterns of influence to attend college, awareness of agricultural engineering as a career field, and the selection of agricultural engineering as an initial major, it is not possible to ascribe these differences to attendance of high school agriculture classes. Other factors may well have influenced all of these decisions.

3.

Occupational Choices in Selected Health Professions

Anderson, H. E., Jr. and Barry, J. R. (1965)

What is the relationship between personality and ability tests and choices in selected health professions?

POPULATION AND SAMPLE

The sample included 157 female freshmen and sophomore students at the University of Florida enrolled in the basic health related services (HRS) course during the 1961, 1962, and 1963 school years. The students were divided into four groups based on their expressed area of preference. The groups were as follows: medical technology (MT), N = 43; occupational therapy (OT), N = 20; physical therapy (PT), N = 28; and others (O), N = 66.

The sample size varied somewhat between the five studies included in the report due to the lack of complete data for all students.

INSTRUMENTATION AND DATA

Five instruments were used in data collection: (a) the Florida Placement Examination (FPE) achievement subscales, English, natural science (NS), social science (SS), mathematics, and a "quasi-I.Q. type" scale, psychology; (b) the Minnesota Multiphasic Personality Inventory (MMPI) 10 clinical scales; (c) the School and College Ability Test (SCAT) verbal (V) and quantitative (Q) scales; (d) the Attitude Toward Disabled Persons (ATDP) test; and (e) the Strong Vocational Interest Blank (SVIB) for Women 29 scales.

DESIGN AND ANALYSIS

The data were analyzed as five different studies.

Study 1: An analysis of academic achievement histories using FPE subscales. Percentile scores were used for this analysis.

Study 2: A comparison of personality scores using three previously identified MMPI factors across the four preference areas.

Study 3: An attempt to differentiate subjects by basic intellectual abilities using the SCAT V and Q scores.

Study 4: A study of group differences in relation to attitudes toward disabled persons using the ATDP.

Study 5: A study of vocational interest differences among groups using the SVIB.

The analyses of the data in all of the studies except Study 4 were conducted using discriminant function analyses. Results were reported as chi-square values.

Analysis of the data for Study 4 involved simple analysis of variance.

RESULTS AND DISCUSSION

Study 1: Results showed that NS and SS subscales of the FPE were the best predictors of preference among the four groups. Chi-square was significant at the .01 level.

Study 2: Comparison of the four groups on the three MMPI factors (depression, psychopathic deviate, and hypochondriasis) failed to show any significant differences among the groups of students.

Study 3: No significant discrimination was found among the four groups in terms of basic intellectual abilities.

Study 4: Students indicating a preference for MT tended to have more favorable attitudes toward disabled persons while PT students tended to have the least favorable attitudes. The differences found were not significant, however.

Study 5: Significant differences (.01) were found in the vocational interest scores on the SVIB among the four groups. The 10 factors which were identified included: (1) housewife, school teacher, social worker, etc.; (2) physician, laboratory worker, dentist, etc.; (3) artist, author, librarian; (4) stenographer, etc.; (5) dietician, home economics teacher; (6) occupational therapist, nurse; (7) lawyer, psychologist; (8) music performer; (9) physical education teacher; and (10) masculine-feminine.

1. The MT group scored lower than other groups on factors 1 and 7 which both require interaction with people and are non-technical in nature.
2. The PT and O groups were low on factor 3.
3. The rank order of groups on factor 4 showed O was highest, then PT, MT, and OT.
4. The PT group showed the highest score on factor 9.

A comparison of the predictive values for identifying area preference showed that, in 74 cases, the SVIB correctly identified 73 students, compared to 38 misclassifications based on FPE predictions.

COMMENTS

Although the FPE was found to predict area preference at a significant level, it was far out performed by the SVIB.

One result, even though it was not significant, was a little surprising: the physical therapy students revealed the least favorable attitude toward disabled people. Would such a finding hold up across other groups of students? If so, this attitude should be a concern in counseling PT majors.

4.

Life Goals and Vocational Choice

Astin, A. W. and Nichols, R. L. (1964)

What are the relationships between life goals and career choices of high aptitude college seniors?

POPULATION AND SAMPLE

A questionnaire was sent to each of the 8,489 merit finalists and recipients of the Letter of Commendation from the 1957 National Merit Scholarship competition. The questionnaire was sent out in the spring of 1961, just shortly before the students graduated from college. The rate of return on the questionnaire was 78% (6,593). The number of usable questionnaires was further reduced to 5,495. The sample included 3,830 men and 1,665 women. The mean scores for men and women on the SAT verbal were 651 and 669, respectively. Mean SAT mathematical scores were 676 for men and 629 for women.

The male students were divided into 19 different groups on the basis of their expressed career choices. The female students were divided into 17 groups on the same basis. The N in each of the groups ranged from 20 to 615.

INSTRUMENTATION AND DATA

A questionnaire included items describing life goals in three general areas: vocational, personal, and social.

The students' responses to 26 general and specific items were factored to isolate the general dimensions of life goals and to reduce redundancy in the items. Each of 22 specific life-goal items was rated on a 4-point scale: essential (score 4), very important (score 3), somewhat important (score 2), and little or no importance (score 1).

The student was also asked to rate himself on 29 traits, such as, artistic ability, athletic ability, conservatism, popularity with the opposite sex, emotional stability, and others. The rating employed a 4-point scale: top 10% (score 4), above average (score 3), average (score 2) and below average (score 1). These ratings were included, along with the 26 items pertaining to the students' life goals, in a factor analysis in order to facilitate the interpretation of the life goal dimensions.

The questionnaire included one open-end response question, "Look ahead 10 years and describe the single future accomplishment which for you would represent achievement or success." Using 200 questionnaires, a content analysis was used to develop two codes for the open-end question. The first code indicated whether the content of the response was vocational, personal, and/or family or marriage. A given response could be classified into more than one category. The second code indicated the specific nature of vocational goals: technological, intellectual, artistic, social, or concerned with status or power. An additional 300 questionnaires were used to test the reliability of the coding systems. Agreement between two independent judges was 84% for classifying responses.

DESIGN AND ANALYSIS

A random subsample of 250 male and 250 female students was drawn from the larger sample. Correlations among the 54 life-goal and self-rating items were computed separately for the two sexes. Two additional variables were included in the matrix to assess the importance of the response biases: the total number of specific life-goals checked essential and the number of self-rating items checked in the top 10%. "The two resulting 56x56 matrices were factored separately, using the principal components method . . . Factors accounting for more than 3% of the variance were retained and rotated to the normalized varimax criterion of orthogonal simple structure."

The factor scores derived from the specific life-goals items and the coded responses to the open-end question of each of the 36 expressed career choice groups were then compared.

Ten chi-square tests were used to determine discrimination power of five factors by dividing students as high and low scorers across the career groups.

RESULTS AND DISCUSSION

1. Eight factors were obtained from separate analyses of the male and female matrices: (1) self-concept, (2) personal comfort (weighted heavily with life-goals items), (3) artistic endeavors (combines both life-goals and self-concept items), (4) self-rating factor (composed of self-ratings used in predicting academic success, drive, perseverance, etc), (5) science-technology, (6) prestige (primarily a life-goal factor), and (7) altruism (concerned with life-goals). (Factor 8 was not explained in the report of the study.)
2. Five variables discriminated significantly among the 36 career groups: Factors 2 (personal comfort), 5 (science-technology), 6 (prestige), 7 (altruism), and

median expected income after 10 years. The discrepancies in life goals between some of the career groups were very large; for example, 100% of the clergymen had high scores on the altruism factor, while only 47% of the research mathematician group scored high on the altruism factor. The five variables also discriminated within groups. While 100% of the clergymen had high altruism scores, only 2% had high scores on science and technology.

3. In general, men expected higher salaries ($11,297 median) than women ($7,356 median), scored higher on the science and technology and the prestige factors, while women scored higher on the personal comfort and altruism factors.

4. Men were more likely to respond to the open-end question in vocational terms, whereas women were more likely to respond in terms dealing with marriage and family. The two sexes were almost equal in personal responses.

5. The specific vocational goals most often listed by males pertained to status and power (28%), followed by intellectual (14%), social (8%), artistic (3%), and technical (2%). Women listed social the most often (12%), followed by status and intellectual (5% each), and artistic (4%).

COMMENTS

The initial factor analysis of the life-goal data and the preliminary analysis of the usefulness of these factors in discriminating among vocational groups appear to have been done carefully. The data suggest that these factors have value for discriminating among vocational groups. Further analyses either showing individual differences among vocational groups along each dimension or using these factors to predict in which vocational group members of an independent sample would belong were missing. The seven factors pertaining to self-rating and life-goals may have value as predictors of vocational choice and satisfaction; however these values, if they do exist, were not made clear in the results of the study. The study spent more time describing differences across sex groups than across vocational groups—the focus of the study. A careful follow-up study making fuller use of the seven (or eight) factors is needed to evaluate the full potential of this study.

5.

Persistence and Attrition of Engineering Students—A Study of Freshman and Sophomore Engineering Students at Three Midwestern Universities

Augustine, R. D. (1966)

What factors influence the persistence or the attrition of academically proficient engineering students?

POPULATION AND SAMPLE

The population consisted of all the male students who entered engineering at the University of Wisconsin, Northwestern University, and Michigan State University as first time freshmen in September 1963.

"The sample was comprised of two groups—persisters and non-persisters. The non-persisters were those members of the population who had changed majors to non-engineering curricula during the freshman or sophomore year while earning at least a 'C' cumulative grade point average. A comparison group of persisters was established by individually matching students from the population who had demonstrated the same academic potential as the non-persisters but who had persevered in the pursuit of their engineering degree. Of the 326 students invited to participate, 221 (126 non-persisters and 95 persisters) or 68% returned questionnaires."

INSTRUMENTATION AND DATA

A questionnaire collected data from each student to establish a frame of reference for a later interview.

"The questionnaire explored in a preliminary way the personal, family, and educational background of the student. It attempted to elicit information concerning those factors which may have prompted him to choose engineering as his original major and his aspirations and expectations in his chosen field.

"A pretest of the questionnaire at Michigan State proved the form to be a satisfactory one for the purpose of this study."

Additional and more detailed data were supplied on each student through a planned interview, using a semi-standardized interview guide. As a result of the pretest of the interview guide at Michigan State, a number of small changes were made on the instrument. This experience also suggested more effective approaches to be used by the interviewer.

DESIGN AND ANALYSIS

The questionnaire was sent to all non-persisters and persisters at the three universities. A private 30 to 40 minute in-depth interview was conducted and tape-recorded with those who responded to the questionnaire. Tests of significance were applied to analyze results of the questionnaire. Content analysis was performed on the original statements made by the students from their tape-recorded interviews.

RESULTS AND DISCUSSION

Statistical analysis of the data elicited by the questionnaire revealed the following noteworthy significant relationships:

1. In many instances, proportionately more non-persisters than persisters came from lower middle class homes and were graduated from central city or non-metropolitan high schools.
2. Non-persisters attached more importance to social status and prestige and the opportunity to work with people rather than things. ("Changes of 'people-oriented' students out of engineering are consistent with research findings reported by Rosenberg, Holland and others.")
3. The age at which respondents first considered the possibility of a career in science or engineering was inversely related to persistence in an engineering program.

The most noteworthy findings of the interviews based on content analysis of the tape recordings were:

1. The most common reasons for choosing engineering as their field of study were: (a) success in high school math and science courses, (b) encouragement from fathers, brothers, and friends, (c) monetary benefits, prestige, and glamour of the field.

2. Persisters and non-persisters are frequently dissatisfied with the highly structured, inflexible engineering curricula.
3. Certain required courses, especially mathematics, antagonize many students and reinforce misconceptions of the nature of engineering work.
4. Friends of respondents play important roles in their decisions to continue their engineering studies or change to other curricula.
5. Large proportions of both persisters and non-persisters report passive, procedural relationships with their academic advisers as being typical.
6. Non-persisters cite a variety of reasons for transferring out of engineering: (a) mistaken impressions of the engineering field, (b) dissatisfaction with the content of required courses, (c) scholastic performance did not meet self-expectations, (d) adopted or wanted to explore new career goals.

COMMENTS

Matching non-persisters with persisters on GPA does not match them on other factors. Grades may not be the most important factor related to persistence in engineering. A random sample from each group would have provided a more acceptable basis for making generalizations concerning the two groups involved.

6.

Perceived Parental Attitudes and Parental Identification in Relation to Problems in Vocational Choice

Brunkan, R. J. (1966)

Do perceived parental attitudes and parental identification influence vocational decision-making?

POPULATION AND SAMPLE

The sample consisted of 289 sophomore, junior, and senior undergraduate males enrolled in psychology courses at the University of Iowa. Only those students who had lived with their father or stepfather until the age of 14 years or beyond were included in the study. The mean age of the students was 20.39 years.

INSTRUMENTATION AND DATA

The Semantic Differential (SD) was used to assess the degree of parental identification based on the difference between the student's rating of self and his rating of father, mother, ideal father, and ideal mother.

The Family Relations Inventory (FRI) developed by Brunkan and Crites was used to measure perceived parental attitudes. The FRI contains 202 items representing 6 scales: father concentration, father acceptance, father avoidance, mother concentration, mother acceptance, and mother avoidance.

A system of classification proposed by Crites was used to categorize problems in vocational choice. The categories included: (1) problems of adjustment, (2) problems of indecision, and (3) problems of unreality.

A composite score of the American College Testing (ACT) battery was used as the measure of aptitude. The Strong Vocational Interest Blank (SVIB) was used as a measure of interests. Occupational choice was obtained from the Vocational Choice Inventory (VCI). The SVIB was analyzed using Stephenson's system of pattern analysis.

DESIGN AND ANALYSIS

The instruments were administered to all students during the 1962-63 academic year.

Perceived parental attitude scores were changed to t scores ($M = 50$ and $SD = 10$). Since primary interests affected the interactions between parental attitudes and choice problems, analysis of variance was used. The .05 level of significance was accepted for the study.

Three hypotheses were tested:

Hypothesis 1—"Degree of identification differs for the various vocational choice problem categories, these differences depending upon which parent is being rated and/or upon whether the real or ideal parent is being rated."

Hypothesis 2—"Problems of indecision are accompanied by a high degree of father identification, whereas no problem in choice is accompanied by an average degree of father identification."

Hypothesis 3—"Perceived parental attitude scores differ from the various vocational choice problem categories, these differences depending upon which parent is being rated and/or upon which attitude is being considered."

"Type 4 analyses were made of the data relevant to hypotheses 1 and 3, the between-groups variable being vocational choice problems, and the within-group variables being the father/mother dichotomy and type of attitude or type of identification. A simple randomized design was used to test hypothesis 2."

RESULTS AND DISCUSSION

1. Interaction involving choice problem category, father/mother, and ideal father/mother was not significant.
2. The interaction between problem categories 1, 2, and 3 was not significant.
3. The interaction between father/mother and problem categories was significant at the .05 level.
4. A significant interaction (.05) was found between real/ideal parent and father/mother.
5. The degree of identification with father differed significantly from the degree of identification with mother at the .01 level in both real and ideal parents.
6. "The interaction between choice problem categories and degree of identification seems to stem primarily from the within-category discrepancy since no significant between-category discrepancies were found." Hypotheses 1 was partially rejected.
7. The father identification of the two subgroups (no problem and undecided problem) was not significantly different. Hypothesis 2 was rejected.
8. Perceived parental attitude scores did not differ significantly for choice problem subgroups for any combination of father/mother and type of attitude. Hypothesis 3 was rejected.

COMMENTS

The results of this study fail to show the usefulness of either of the major variables investigated—parental identification and perceived parental attitudes—in studying the influences on vocational choice of male undergraduates.

7.

Reference Group Processes and the Choice of Careers in Science

Davis, J. A. (1964)

What effects does the college attended have on the choice of science as a career?

POPULATION AND SAMPLE

The National Opinion Research Center (NORC) collected a sample of some 34,000 college seniors from 135 colleges and universities in 1961. The sample was representative of the population of college seniors who were to graduate with a bachelor's degree in June 1961.

Included in this study were 1,361 students from the NORC sample who reported that their "career preference when you started college" was in science, and 3,469 students who reported other career preferences or no preferences at all.

INSTRUMENTATION AND DATA

The students completed a self-administered questionnaire covering career plans, intentions for graduate study, family background characteristics, college experiences, grades, occupational values and interests, plus retrospective information on career plans at the time they entered college.

Grade point average (GPA) as used in the study was the student's cumulative GPA at graduation. An attempt was made to classify school quality using the mean IQ of entering freshmen at that institution. "Our measure of the 'native academic ability' of the students in the sample is simply whether they reported themselves as having been a 'National Merit Scholarship holder, finalist, or semi-finalist.' "

DESIGN AND ANALYSIS

In the design of the study, "long-run career" was selected as the dependent variable. Initial preference stated as a freshman was used as a control to avoid "spurious effects of 'input.' That is, the proportions of freshmen remaining in science and the proportion of freshmen shifting into science are better measures of the 'effects of college' than the raw proportion of seniors choosing science . . ."

The possible explanations for the choice of science as a career were: (1) choice is a function of test intelligence and therefore related to school quality and GPA; (2) choice is a function of inter-personal influence of intellectual environments and should be related to school quality, but not necessarily GPA; and (3) choice is a function of reference group comparisons on campus (if those students who choose science define themselves as academically superior by local standards) and should be related to GPA, but not necessarily school quality.

RESULTS AND DISCUSSION

1. Initial preference for a science career was associated with GPA, but not school quality. Using three academic variables (test score, campus ability level, and academic standing by local standards), it appeared that local standing was the best predictor of choosing science as a career. "It is those students who do well by local campus standards who anticipate science as a career, not those who would do well on national tests or those who are exposed to superior quality schools."

2. The data indicate that faculty and students judge academic quality by local standards. The successful students by local standards are encouraged by themselves and their faculty associates to pursue careers in science. The low-ranking but, nevertheless, bright students at high quality institutions do not receive encouragement to pursue a career in science.

COMMENTS

The findings suggest a follow-up study of the relative success in science careers of high ability students with low class ranking who attended high quality institutions, compared with the success of high ranked students of equal or less ability who attended lower quality schools.

8.

Predicting the Success of Freshmen Engineers

Dickason, D. G. (1969)

Is the concept of awareness and commitment to engineering as a curriculum and a profession valid? If this concept is valid, can it be used as a measure to predict academic success in engineering?

POPULATION AND SAMPLE

The sample consisted of 606 freshmen who entered the College of Engineering at Cornell University in 1967.

INSTRUMENTATION AND DATA

The following tests were given to all entering freshmen at Cornell University: Scholastic Aptitude Test (SAT) verbal and math, College Entrance Examination Board achievement test in physics and chemistry, National Merit Scholarship Qualifying test, a personal characteristics rating, OAIS, psychological differentiation tests, and rank-in-class ratings were considered in rating the students. Some students also received personal interviews. (The OAIS was not described in the report of the study.)

DESIGN AND ANALYSIS

All personal files of the students were read at least once; 85% were read by a second person; and 49% were read a third time by a different person. The awareness/commitment (A/C) ratings for each individual were based on a discernable awareness of and commitment to engineering, as evidenced by the student's investigation of the field and its requirements. The data required by the reader to make the ratings were obtained from each personal file.

Personal interviews were held with 271 of the students by either a member of the engineering staff or an alumnus of the university (not necessarily an engineer), or both.

Single order correlations were made between each independent variable and first-term grade point average (GPA), the dependent variable. Single order intercorrelations were made between the independent variables. Interreader correlations for A/C ratings were determined for a random sub-sample using chi-square. Chi-square was used to evaluate the relationship between A/C ratings and GPA.

RESULTS AND DISCUSSION

1. All three A/C interreader correlations were significant at the .05 level: Readers #1 and #2, N=121, and $X^2=.77$; Readers #1 and #3, N=75, and $X^2=.54$; and Readers #2 and #3, N=49, and $X^2=.68$.
2. Intercorrelations between academic variables were consistent with previous research findings.
3. Chi-square was not significant and, therefore, did not support the hypothesis that A/C could be used to predict academic success.

The author lists some variables that were not properly controlled: (a) Awareness that commitment to engineering as a curriculum and profession are not necessarily linked together and should have been treated separately; (b) When personal interviews were conducted by a member of the engineering staff, there was a significant correlation between A/C and GPA; (c) Both good and bad students drop out of engineering, indicating GPA is not all that should be considered in predicting success (perhaps "remaining in the program" should be used in place of GPA); (d) Previous studies have shown that first-term GPA is not as good a measure of academic success as are subsequent GPAs.

COMMENTS

The design of the study was basically good, but proper controls were not applied. The reliability of this study is doubtful because of the lack of controls over certain variables, such as the types of interviewers, and the combination of two independent variables—awareness and commitment.

If it is possible to assess a person's awareness of the requirements of a profession and a curriculum and to evaluate his commitment to follow-through, it probably could be used effectively to predict success in that area.

9.

Planned and Unplanned Aspects of Occupational Choices by Youth: Toward a Morphology of Occupational Choice

Ellis, R. A. and Tyler, L. (1967)

What are the form and structure of the factors and variables which influence eventual occupational choice?

POPULATION AND SAMPLE

"The job corpsmen chosen for the pre-study consisted of 120 unmarried males ranging in age from 17 to 19 who were for the first time beginning their training in the job corps program. They were selected by taking all new arrivals at Tongue Point (Oregon job corps center) during the period from February 26, 1966 to April 9, 1966—except for those who had transferred to Tongue Point from other programs and those who were 17 or over 20 years of age."

"The sample is obviously not a random one either of all job corpsmen or of job corpsmen at Tongue Point. Rather it reflects whatever vagaries might be present in the allocation procedures for assigning trainees to Tongue Point during this period."

"The University of Oregon freshman sample consisted of 48 unmarried males ranging in age from 17 through 19 who were for the first time enrolled in college. They were selected by drawing a random sample of all single first year freshmen residing at the University of Oregon dormitories in April 1966, a procedure which excluded the approximately 20% of the freshman class who live at home with their parents."

INSTRUMENTATION AND DATA

Data from the job corpsmen were obtained primarily by a pretested, planned interview. Two basic techniques were incorporated in the planned interview—the method of direct assessment and the Choice Pattern technique.

The corpsman was asked to specify what kind of work he would like to do when he started working or, if he had no specific goal, what type of work he was thinking of doing. After a job was mentioned, he was asked if he thought it was a good job and reasons why or why not. Following this, the respondent was asked what kind of work he wanted to do at age 50. If his long-term job goal differed from his initial one, a direct assessment was again made of why he did or did not think his age-50 job choice was a good job.

"A second source of data on the job corpsmen were administrative records that provided information on those who were severed from the program."

"For the University of Oregon freshmen . . . two methods of collecting self-report data were used. Approximately one-half of the students (48) were interviewed, while the remainder (41) were given mass-administered questionnaires." The questionnaire and interview both asked for the same occupational and personal background information.

The final and primary instrument used in the study was the Morphology of Occupational Choice (MOC), which was developed by the researchers to categorize factors which influence initial and eventual job selection. Through extensive review of the literature, and by trial-and-error analysis, four main dimensions of job selection were identified: (1) intrinsic features of the work itself, (2) extrinsic rewards of the work, (3) extra role considerations, and (4) feasibility considerations. Within these four major dimensions, 27 component elements were identified. These 27 elements of choice were grouped by major dimension and formed the Morphology of Occupational Choice.

DESIGN AND ANALYSIS

Data from the interviews with job corpsmen were compared to the data received from the interviews and questionnaires of the college freshmen.

The data from the college freshmen's interviews were compared to the data from the college freshmen's questionnaires.

The results from job corpsmen and from college freshmen were coded and analyzed by MOC categories.

RESULTS AND DISCUSSION

1. In comparing the corpsmen with the college freshmen, marked differences of personal and social background, experiences, and future outlook were found. This was expected, but documentation was necessary to validate the authors' premise that the MOC is a valid model of occupational selection.

2. The results of the college freshmen's interviews differed to a surprising degree from the college freshmen's questionnaire.

"The two procedures yield consistently different results, differences which are so substantial that, if we did not know otherwise, we would be tempted to conclude that two different populations of college students had been studied."

3. Comparisons of college freshmen and job corpsmen to categories of MOC revealed the following selected findings: (1) "...youth from both groups are able to report in considerable detail their considerations for rejecting as well as choosing jobs—although in both cases, use of exclusion method is less in evidence." (2) "...all four of the main MOC categories are employed by at least a sizeable minority of the respondents for expressing their reasons for reaching occupational decisions . . ." and (3) "The central finding, so far as the validity of the morphology is concerned, is that the two groups of youth are revealed by this method of analysis to have markedly different orientations to the world of work . . . freshmen at the University of Oregon are far more likely than the job corpsmen to be seeking work in occupations that provide them a chance for self-fulfillment and at the same time are more apt to be rejecting those occupations which do not offer them this avenue of satisfaction."

COMMENTS

The finding that the two populations (job corpsmen and college freshmen) differed on the MOC lends support to its validity. However, the two samples of college students differed greatly. While the study does not clearly state so, it seems likely that these two samples would also have differed on the MOC. If so, the instrument's value is not unambiguous. Additionally, there is an inconsistency in the number of subjects reported in the sample.

10.

Three Dimensional Classification of the Occupations of College Graduates

Glick, P., Jr. (1965-66)

No research problem was stated by the author. His concern was probably with the validity and possible utility of a three-dimensional classification system of occupations. The problem appears to have become more limited in practice to a description, using a three-dimensional system, of the occupations of graduates from one institution.

POPULATION AND SAMPLE

The sample consisted of 661 graduates from the Delaware Valley College of Science and Agriculture. Of that total, 476 were respondents to a questionnaire sent to 690 graduates. The remaining 185 graduates were alumni of the college selected in an occupational survey of March 1963. The questionnaires were sent out in November 1963. In January, 1964, a follow-up was made on those questionnaires not returned. (No further sampling information was given in the report of the study.)

INSTRUMENTATION AND DATA

A questionnaire was sent to the graduates requesting occupational and educational information. (A description of the type of information sought was not provided in the report of the study.)

A Three-Dimensional Classification of Occupations Instrument designed by Glick was used to classify those occupations listed by the graduates as their career choices. The instrument classified each occupation according to level (professional, semi-professional, skilled, semi-skilled, unskilled), field (outdoor and physical, social, business, research, others), and enterprise (agriculture, mining, construction, business, finance, others). (No rationale for the use of the levels, fields, and enterprise was included in the report of the study.)

DESIGN AND ANALYSIS

Classifications of occupations were tabulated and reported as the percentage of graduates in each classification. Chi-square was used to test the significance of the differences between the percentages.

RESULTS AND DISCUSSION

1. Of the six occupational levels described in the study, only the top three (professional and managerial-higher, professional and managerial-regular, and semi-professional and managerial-lower) contained reported occupations. The last three levels were skilled, semi-skilled, and unskilled.

2. The percent of graduates who stated occupational choices in the top three levels were 11%, 69%, and 20%, respectively. Professional and managerial-regular was the most frequent level (chi-square significant at the .01 level).

3. The highest percent of graduates chose occupations (classified by means of the field dimension) involved with social and personal services (28%), followed by outdoor and physical activities (23%), business (19%), and research (17%). Chi-square showed the distribution of graduates according to field was statistically significant (.01).

4. The distribution of graduates on the enterprise dimension showed 28% were working in professional and related enterprises, followed by 21% in agriculture, 21% in wholesale and retail trade, and 17% in government. The differences in the distribution were found to be significant at the .01 level using chi-square.

COMMENTS

The subgroups within each level of classification in this system seem to have been rather arbitrarily defined. The value of this three-dimensional system for classifying occupations is not immediately apparent. Some demonstration of its worth, relative to other classifying systems, is needed. This could be either empirical or logical. The use of chi-square to show that the system results in categorizing occupations so that the percents in the categories differ significantly, does not demonstrate the validity or the utility of the system.

The percents of graduates in each group make it difficult to draw generalizations, since graduates of a small college of science and agriculture obviously have specific interests and rather limited ranges of occupational types.

11.

Occupational Satisfaction— A Better Criterion?

Harmon, L. W. (1966)

Can individuals separate satisfaction with a specific position or job (job satisfaction) from satisfaction with the duties of their chosen occupation (occupation satisfaction)?

POPULATION AND SAMPLE

The population included all of the students who had previously found employment through the placement office at the University of Minnesota College of Liberal Arts, but were seeking a new position at the time of the study.

Three judges independently separated the students into three groups, depending upon their degree of occupational and job satisfaction. The group classifications were: high O and low J (seeking a new job in the same occupational field, N=39), low O and low J (seeking a new job in another occupational field, N=34), and high O and high J (a random sample of students previously placed who were not seeking new positions, N=55). It was assumed that they were satisfactorily placed.

A possible fourth group—low O and high J— was not identified. It was hypothesized that these people probably remain in their positions. Such individuals may have contaminated the high O and high J group.

Of the 259 blanks sent out, only 128 were returned and used in this study.

Positions held by the students were mainly in sales, management, and public relations. There were some chemists and mathematicians, and a few secretaries included.

INSTRUMENTATION AND DATA

The instrument used two forms (J and O) of the Hoppock Job Satisfaction Blank. The J form was the standard form measuring job satisfaction. The O form was referred to as the Occupational Satisfaction Blank, and it had two scales of eight items each. The items on the O form were written in parallel form to the items on the J form, but with the word occupation in the occupational scale, where the words job situation occurred in the job satisfaction scale. Reliabilities for the two scales were about .85.

DESIGN AND ANALYSIS

Means and standard deviations were computed for groups, and differences compared using analysis of variance, which allowed for repeated measurements on a student.

Three hypotheses were tested:

Hypothesis 1—People judged high in occupational satisfaction will score significantly higher on a measure of occupational satisfaction than those who were judged low in occupational satisfaction.

Hypothesis 2—People judged high on job satisfaction will score significantly higher on a measure of job satisfaction than those who were judged low on job satisfaction.

Hypothesis 3—The difference between scores on measures of occupational and job satisfaction will be significantly greater for the high O and low J group, than for either of the other two groups.

RESULTS AND DISCUSSION

1. The corrected, split-half reliability estimates for O and J scales were .84 and .87, respectively.
2. The mean differences were in the expected direction; i.e., high O and low J resembled high O and high J group on the O scale, and the low O and low J group on the J scale. The scores on the two scales fell at mid points between the extreme scores on both scales. The resemblances were not as great as hypothesized.
3. No greater difference emerged between the means of the two scales for the high O and low J group, compared to other groups, therefore, Hypothesis 3 was rejected.

Results may have been more conclusive if parallel forms of the questions had not been used on the O and J scales.

The study contributed to the over-all validity data for the Hoppock Job Satisfaction Blank.

COMMENTS

On the basis of this study, the use of occupational satisfaction as a companion or replacement concept for job satisfaction is not warranted. The final question of whether or not occupational satisfaction as a concept has potential, cannot be answered from these data because of problems in sampling (possibly too homogeneous), judging group membership and instrumentation.

12.

The Vocational Decision-Making Process Among College Males

Harren, V. A. (1966)

What are the processes involved in the vocational decision-making of college males?

POPULATION AND SAMPLE

"A stratified sample was drawn, containing 86 liberal arts, undergraduate males in good academic standing." The selection of the sample was designed to control the effects sex, low grade performance, and narrowness of college major had on the decision-making process. Only liberal arts majors were included because of the wide range of vocationally relevant concerns in their major areas.

INSTRUMENTATION AND DATA

The instruments used were the Vocational Decision-Making Q Sort, the Edwards Social Desirability scale, and a basic data sheet.

"Correlation coefficients between each item of the Q sort and the SD Scale ranged from —.31 to .28, thus suggesting that the Q sort item responses were not strongly affected by the social desirability response set of the subjects."

DESIGN AND ANALYSIS

Two areas of decision-making were studied: choice of major field of study and choice of an occupation.

Four stages of the decision-making process were defined: exploration (vague concern—little progress toward choice), crystallization (progress toward, but not attainment—recognizes alternatives), choice (a definite commitment with some degree of certainty), and clarification (the process of closure). The design of this study combined each of the two areas of decision-making (choice of major field and choice of occupation) with the four stages of decision-making (exploration, crystallization, choice, and clarification) to form eight categories, each represented by seven items on the Q sort instrument.

Three hypotheses were tested:

Hypothesis 1—"Within main effect A, the areas of decision, there are significant differences between the means of the two levels, major and occupation."

Hypothesis 2—"Within main effect B, the stages of decision, there are no significant differences among the means of the four levels, exploration, crystallization, choice, and clarification, for all subjects."

Hypothesis 3—"There are significant AB interaction effects among the areas and stages of decision."

The data were analyzed using factor analysis and analysis of variance.

RESULTS AND DISCUSSION

1. Factor analysis identified 19 factors which accounted for 83% of the total variance. Six factors referred primarily to occupation; three to major; and 10 referred to both major and occupation. (The factors were not identified in the report of the study, but were referred to by numbers 1-19.)
2. Factor 6 (main effect A referred to major and main effect B referred to crystallization) provided support for Hypothesis 1, indicating that some students do distinguish between major and occupation at various stages of decision-making.
3. Six factors, representing all stages of decision-making, did show significant differences. Hypothesis 2 was rejected.
4. "Hypothesis 3, that there are significant AB interaction effects, was accepted for Factors 4 and 8. Thus those students with high loadings on these factors were at different stages simultaneously with regard to different areas."

COMMENTS

The results of this study would have been more meaningful if the factors had been identified. It is not clear just what the meaning is of a significant main effect for areas of decision-making. Is it that students choose occupations unrelated (or only moderately related) to college major, or vice versa? Also, what does it mean if there are significant differences across the four stages of decision-making? For interpretability, more information about the Q-sort items is needed, as well as some theoretical rationale for their selection.

In addition, 19 factors from 72 items suggest that several of the factors may not survive replication.

13.

Some Personal and Social Determinants of Occupational Role-Taking in College Students

Hershenson, D. B. (1965)

What are the effects of certain personal factors and prestige-value of the selected occupation on the occupational role-taking in college students?

POPULATION AND SAMPLE

The sample consisted of 162 Harvard College juniors who were participants in a longitudinal study of the effects of college on personality development.

INSTRUMENTATION AND DATA

The instrument was constructed to measure the degree to which the adolescent perceives himself as fitting into the occupational role he has chosen. The instrument measured two broad areas: (1) relevance of chosen occupation to abilities, interests, and values as perceived by the student, and (2) the perceived place of the chosen occupation within his past, present, and future life styles.

Pretest for internal consistency of the instrument, using 54 male college graduates, yielded an *r* of .83. Prince's Differential Values Inventory Test was used to divide the sample into two value-oriented groups—traditional (inner-directed orientation) and emergent (other-directed).

DESIGN AND ANALYSIS

The students were grouped into public and private school graduates.

Correlations were determined between the student's perceived fit into his anticipated occupational role and the popular prestige ranking of that occupation using National Opinion Research Center data from 1947.

The chi-square test of significance was used.

RESULTS AND DISCUSSION

1. Significantly more public school graduates than private school graduates perceived their anticipated occupational role as fitting them better (.05).
2. No significant differences were found between the traditional and emergent subgroups, in terms of perceived occupational fit scores.
3. No significant relationship was found between perceived occupational fit and occupation prestige.

COMMENTS

The data of this study raise interesting questions. Why would public school graduates perceive their anticipated occupational role as fitting them better than private school graduates? Is the relative lack of perceived fit of future occupational role in private school graduates a source of anxiety, frustration, or discontent to them? Was there a difference between public and private school graduates in the occupational levels of their anticipated occupational roles? (This may account for the lack of relationship between perceived occupational fit and occupational prestige.)

14.

Character Structure, Vocational Interest, and Achievement

Kipnis, D., Lane, G. and Berger, L. (1969) Study A

What are the relationships between vocational choice and character structure?

POPULATION AND SAMPLE

The sample included all male freshmen (N=628) entering the University of Delaware in 1964. All students took a measure of character structure as part of a testing series before beginning their first year in college. The students were divided into three groups on the basis of their character structure scores. Students scoring 21, or above, were placed in the top one-third of the distribution and labeled high impulsive. Those scoring between 16 and 20 were placed in the middle third and labeled middle impulsive. Those scoring 15, or below, were in the bottom one-third and labeled low impulsive.

The students were also classified on the basis of intellectual ability, using a combination of the verbal and mathematics scores on the Scholastic Aptitude Test (SAT). They were divided into two groups, using a median combined SAT score of 1,100.

The students were grouped according to the curriculum in which they were enrolled: College of Arts and Sciences; College of Engineering; and Colleges of Business, Education, and Agriculture.

INSTRUMENTATION AND DATA

The instruments included a measure of character structure (a test composed of 41 biographical-type items related to social relations, family, authority figures, sports, and others), and the SAT.

DESIGN AND ANALYSIS

Academic performances of the students through completion of the second year at the University of Delaware were analyzed in terms of the number of students who dropped out of school from the beginning of the freshman year to completion of the sophomore year, and in terms of cumulative college index of those completing the second year.

Chi-square analysis was used to determine if significant differences existed between observed and expected frequencies of vocational interest and achievement.

Analysis of variance was used to investigate the relationship between grades and impulsiveness.

RESULTS AND DISCUSSION

1. Chi-square analysis showed that fewer high impulsive students chose engineering as a career, than either middle or low impulsive students.

2. Impulsiveness and intellectual ability were both related to whether or not a student dropped from school during this period. Twenty-one percent of the high ability group dropped out, compared to 41% of the low ability group. Thirty-nine percent of the high impulsive group had dropped out of school, compared to only 26% of the low impulsive group. Chi-square was significant at the .05 level.

3. The highest relationship between grades and impulsiveness existed in the engineering curriculum. The higher the ability, the lower the impulsiveness (significant at the .001 level).

COMMENTS

Impulsiveness appears to be a factor to be considered in counseling potential engineering students.

15.

Character Structure, Vocational Interest, and Achievement

Kipnis, D., Lane, G. and Berger, L. (1969) Study B

What are the relationships between vocational choice, impulsiveness, and satisfaction with vocational choice?

POPULATION AND SAMPLE

The sample included 30 business management majors and 30 mathematics, chemistry, and physics majors at Temple University. The students were all juniors and seniors randomly selected from lists of students majoring in these areas.

INSTRUMENTATION AND DATA

The instruments used in the study included the Scholastic Aptitude Test (SAT) verbal and mathematical scales, and an impulsiveness scale used as a measure of character structure. The impulsiveness scale consisted of 41 biographical-type items dealing with such areas as: the student's early and current social relations with family, peers, authority figures, as well as his ability to delay gratification, and his interest in sports.

SAT scores were obtained from college records. Academic achievement was based upon GPA for the school term in which he had been tested.

DESIGN AND ANALYSIS

The students were asked to rate their satisfaction with their choice of college major. The rating employed a 5-point scale, with 5 representing the highest degree of satisfaction.

Coefficients of correlation between impulsiveness scores and the ratings of satisfaction with choice of major, and between SAT scores and satisfaction with major, were computed for each of the two groups.

The F Test was used to determine significance of the differences between the groups.

Three hypotheses were tested:

Hypothesis 1—Business majors will score higher on the impulsiveness scale than mathematics, chemistry, and physics majors.

Hypothesis 2—Among mathematicians and physical science majors, there will be a negative relationship between impulsiveness scores and satisfaction with choice of major. The opposite will be true for business majors.

Hypothesis 3—Among mathematicians and physical science majors, there will be a negative relationship between impulsiveness and GPA. The opposite will be true for business majors.

RESULTS AND DISCUSSION

1. The mean impulsiveness score for business majors was 17.30, compared to 13.00 for the mathematics and physical science groups (significant at the .01 level). Hypothesis 1 was accepted.

Using only those students with combined SAT scores of 1,000, or better, the mean impulsiveness scores for business majors increased to 19.3, while remaining at 13.0 for physical science, and mathematics majors.

2. The coefficient of correlation between impulsiveness scores and satisfaction with major choice for

mathematicians and physical science majors was −.67 (significant at the .01 level). Again, the effects of intelligence were found. Using SAT scores of 1,000, or better, the correlation became −.88.

3. The correlation between impulsiveness scores and satisfaction with major choice for business subjects was .01 (not significant).

4. SAT scores were found to correlate .64 (significant at the .01 level) with satisfaction with choice of business majors. No significant correlations were found between SAT scores and satisfaction for mathematics and science majors.

5. No significant correlations were found between term GPA and impulsiveness scores for either group.

6. The results support the prediction that impulsive people steer away from vocations requiring persistence in study.

COMMENTS

The apparent assumption that business courses (or a business major) require less persistence in study than mathematics, chemistry, or physics courses may be unwarranted. At least, it warrants empirical check. Further, the apparent assumption that impulsiveness and persistence are opposite poles of the same continuum needs empirical check.

The findings that business majors have higher impulsivity scores than physical science and mathematics majors, and that impulsivity correlates negatively with satisfaction with major choice for mathematicians and physical science majors, are consistent with the interpretation implied by the above mentioned assumptions. However, lacking the independent checks suggested, the validity of such an interpretation cannot be assumed.

16.

Self-Esteem as a Moderator in Vocational Choice

Korman, A. K. (1969)

Does self-esteem operate as a moderator on the vocational choice process, in that high self-esteem individuals are more likely to seek self-fulfillment than are low self-esteem individuals?

POPULATION AND SAMPLE

The sample included 135 male students at a far western state university. Of these, 22 were majoring in marketing and sales, 36 in general business, 35 in accounting, and 42 in an area unrelated to business. (No additional information about the students was provided in the report of the study.)

This study was replicated three separate times, using different types of people in each study. Study 2 included 65 male, upper-division, business majors (at a different western state university) who had not indicated a specific career in business, and 58 upper and lower-division, male students (from two eastern universities) who were majoring in different areas, such as education, biology, and social work. Study 3 included 67 lower-division students (from a private eastern university) who expressed a definite occupational choice. Study 4 included 53 males and 29 females. (No further description was provided in the report of the study.)

INSTRUMENTATION AND DATA

"Self-esteem in all studies was measured by the Self-Assurance Scale of the Ghiselli Self-Description Inventory, with the cutoff in all cases for 'high' and 'low' self-esteem the 50th percentile on the nationwide norms." The high self-esteem and low self-esteem groups will be identified as HSE and LSE, respectively.

The Gough Adjective Checklist was used in the main study to measure self-description, according to certain adjectives.

Crites Vocation Reaction Survey was used in Study 2 to measure the need for material security and social service.

The Ability Assessment Questionnaire was used to measure self-perceived numerical abilities in Study 3.

A questionnaire was used to determine the occupational choices of the students in Study 4.

"Judgments of the 'Ethicality of Business Behavior' in Study 4 were measured by having Ss rate, on a 4-point scale, the ethicality of 25 incidents which have actually occurred in the business world in recent years."

DESIGN AND ANALYSIS

Two hypotheses were tested in these four studies: Hypothesis 1—"HSE individuals who enter a given occupation are more likely to describe themselves according to generally given stereotypes of that occupation than both LSE people who enter that occupation and a random sample of those who enter different occupations."

Hypothesis 2—There will be no differences between the LSE people in a given occupation, and the random sample of people in another occupation, in terms of self-ratings according to occupational stereotype.

Means and standard deviations were computed for all groups on all measures. Significance of the differences between the means were tested using the *t* test.

RESULTS AND DISCUSSION

Results were reported separately for each of the four studies.

Study 1—In all cases, HSE individuals described themselves more as meeting the occupational stereotype than did the LSE or random sample individuals in other occupations. This finding was consistent across all occupations measured. A possible contaminating factor may have been the relationship between level of self-esteem and number of adjectives used in describing oneself. "A check for this, using frequency of choosing a random sample of 30 adjectives, indicated that this was not the case."

Study 2—"The HSE business group is significantly higher than the HSE nonbusiness group on 'material security' and significantly lower on 'social service'."

Study 3—"HSE 'quantitative occupation' individuals see themselves as having greater numerical abilities than HSE 'nonquantitative occupations,' whereas the differences are not significant for the LSE groups."

Study 4—The results of Study 4 were similar to those in Study 3.

COMMENTS

The incomplete description of the samples, involved, and the sampling procedures used, makes it difficult to know to what extent these results can be generalized.

The results are in harmony with other studies which have shown that high self-concept people see themselves as more like the ideal person in an occupation they have chosen.

17.

Occupational Choice of Graduate Students in Psychology as a Function of Early Parent-Child Interactions

Medvene, A. M. (1969)

What are the relationships between early parent-child interactions and occupational choice of graduate students in psychology?

POPULATION AND SAMPLE

"The Ss for the study were 461 male graduate students majoring in psychology from 24 universities. The Ss were divided into a total sample population and a doctoral sample population. The entire sample population included 140 master's degree students and 321 doctoral degree students in psychology." (The report of the study provided no further description of the sample or the sampling techniques.)

INSTRUMENTATION AND DATA

The following instruments were used in the study: the Biographical Questionnaires (BQ) which measured parental dominance, and Family Relations Inventory (FRI) which measured parental attitudes and interpersonal orientations. The FRI consisted of six scales: father avoidance, father acceptance, father concentration, mother avoidance, mother acceptance, and mother concentration. Each of the 461 students fell into one of six categories, based on the six scales of the FRI.

DESIGN AND ANALYSIS

The students in the total sample and doctoral sample were compared by person-oriented or non-person-oriented field of psychology and FRI category.

Chi-square analysis was used to determine if any significant differences existed in the number of person-oriented and non-person-oriented students within each of the FRI groups. The alpha level was .05.

RESULTS AND DISCUSSION

1. For the total population sample, significantly more students entered the person-oriented occupations from each of the father acceptance and father concentration groups. Significantly more from the mother avoidance group entered non-person-oriented occupations.
2. In the doctoral sample, significantly more students entered person-oriented occupations from the father concentration and father acceptance groups. Significantly more from father avoidance and mother avoidance groups entered the non-person-oriented occupations.
3. "The separate chi-square tests of independence for the total sample population demonstrated no differential influences of maternal and paternal dominance when the perceived relationships within the home were viewed as Accepting, Concentrating, or Avoiding. The results were similar for both the Accepting and Avoiding categories in the doctoral sample population."
4. Doctoral subjects reared in homes where either parent dominated, and was perceived as concentrating, entered person-oriented occupations in significantly more cases.
5. "In the light of this evidence it can be said that a relationship between early parent-child relations and subsequent occupational choice does exist . . ."

COMMENTS

Although a complete description of the sample was not included in the report of the study, it appears that the sample may be representative enough of graduate students in psychology to allow these results to be applied in similar situations. The value of these findings for college placement people should be limited to counseling graduate students in psychology.

18.

Consistency of Occupational Choices and Roe's Classification of Occupations

Osipow, S. H. (1966)

Are first and second occupational choices similar, in that they fall into adjacent categories of the Roe classification system of occupations?

POPULATION AND SAMPLE

The sample consisted of 193 males and 182 females, randomly selected from the entire entering freshman class at Pennsylvania State University during the summer and fall of 1965.

INSTRUMENTATION AND DATA

The instrument used was a Personal Information Blank. It was completed by all students prior to enrollment at the university. One part of the form asked the students to list their five vocational choices, in order of preference. The first two choices were selected for each of the students. The choices were then classified into the appropriate categories, using Roe's classification system. Roe's system has eight categories arranged in a circular pattern, so that each category has two adjacent categories which are considered similar in nature.

DESIGN AND ANALYSIS

The first and second vocational choices for each student were categorized and compared for similarity or consistency. The mathematical difference between the categories of the first and second choices was determined; e.g., if a first choice was placed in category 1, and the corresponding second choice was in category 4, the mathematical difference would be 3—(4 minus 1 = 3).

Chi-square was used to test the significance of the differences between the number of expected and observed mathematical differences.

RESULTS AND DISCUSSION

1. The mean number of categories separating first

from second choices was 0.99 for males and 1.05 for females. This difference was not significant.

2. Chi-square analysis of expected and observed mathematical differences was significant for both male and female students at the .01 level of confidence. It was expected, according to the null hypothesis of no similarity between choices, that about 50% of the students would display differences in at least two categories. The observed number of male students displaying differences in two or more categories was only 25% of the total, or one-half of what was expected. Female students displaying differences in two or more categories amounted to roughly 66% of what was expected, or 33% of the total.

3. The results suggest a systematic relationship between Roe's classification system, and first and second occupational choices.

COMMENTS

The findings could be restated as a demonstration that people tend to be consistent in their values and/or vocational choices. This study serves as a demonstration of the validity of Roe's classification system that the values and/or vocational choices of individuals tend to be consistent.

19.

Cognitive Styles and Educational-Vocational Preferences and Selection

Osipow, S. H. (1969)

What is the relationship between cognitive style and educational-vocational preference and selection?

POPULATION AND SAMPLE

The sample included seven groups (five female and two male): Group 1—24 female introductory psychology students at Ohio State University; Group 2—233 nursing students from a variety of hospital nursing programs; Group 3—20 home economics majors at the University of Rhode Island; Group 5—39 special educational majors at Ohio State University; Group 6—17 male, pharmacy students; and Group 7—20 male, fisheries technology students at the University of Rhode Island. (The sampling techniques were not explained in the report of the study.)

INSTRUMENTATION AND DATA

Four instruments were used as measures of cognitive style: Word Similarity (a measure of structured word-association task); Object Sort (word sort by similar meaning); an instrument to measure the tendency to engage in extreme responses (statement of extreme like or dislike of 50 common activities); and the Closure Flexibility Test (CFT), which is a measure of field dependence-independence. A high score on the CFT denotes field-independence.

Vocational preference was determined by using area of study and Holland's Vocational Preference Inventory (VPI).

DESIGN AND ANALYSIS

The study was designed to test six hypotheses:

Hypothesis 1—Students in different programs of study will exhibit different cognitive styles.

Hypothesis 2—Students in different programs of study will exhibit different paterns of vocational preference.

Hypothesis 3—Students in the same field, with distinct differences in one cognitive style, will also differ on VPI and other cognitive style measures.

Hypothesis 4—Cognitive styles will correlate with VPI scores in ways which are predictable from previous work describing behavior implications of field independence-dependence.

Hypothesis 5—Students who differ in VPI high point code will also exhibit distinctive cognitive styles.

Hypothesis 6—Students with differing cognitive styles will differ in ease of career-related decisions.

(Statistical treatments for each hypothesis are reported in the Results and Discussion section.)

RESULTS AND DISCUSSION

1. Analysis of variance of the five female groups, compared on the 17 measures of cognitive style (11 subscales of the VPI and six cognitive style scores), showed significant differences between the groups in the following scales: VPI (social, conventional, enterprising, masculinity, and acquiescence), Object Sort, extreme like, extreme dislike, and Closure Flexibility. Hypotheses 1 and 2 were supported for the five female groups.

2. Analysis of the scores for the two male groups involved *t* tests of significance. Significant differences were found between these groups on the following scales: VPI (realistic, enterprising, and status), Word Similarity, and extreme total. Except for Word Similarity and VPI-realistic, the pharmacy students scored significantly higher than the fisheries technology students. Hypotheses 1 and 2 were supported for the two male groups.

3. Hypothesis 3 was tested by examining the distribution of nursing students on each of the cognitive-style variables. Samples, representative of the top and bottom 10% on each of the variable distributions, were selected and compared on each of the VPI and cognitive-style variables; *t* tests of significance were used for statistical comparisons. Significance was found in every comparison. Hypothesis 3 was supported.

4. Hypothesis 4 was tested by establishing an inter-correlation matrix for all variables studied. Hypothesis 4 attempted to predict various relationships between the variables. About two-fifths of all such predictions for females were supported by the data; the percentage was even lower for men. Hypothesis 4 was not supported.

5. Hypothesis 5 was tested by comparing cognitive-style scores with high point codes. No significant differences were found between the VPI groups on any of the cognitive-style variables.

6. Students were quizzed concerning the ease with which they made their choices, and the number of times they had changed their minds, if any. Chi-square analysis of response frequencies for each of the groups were found to be significant at the .001 level. However, high and low scores for cognitive styles showed no significant differences in ease of decision. Hypothesis 6 was not supported.

COMMENTS

Cognitive style emerged as a variable related to college major and vocational preference. Thus, this variable may be of use in prediction studies involving the selection of college major or vocation as the criterion variable. The failure of cognitive style to correlate in a predictable manner with VPI scores, and with ease in making career-related decisions, does not necessarily attenuate its usefulness in prediction of the criteria.

20.

Career and Marriage Orientation in the Vocational Development of College Women

Parker, A. W. (1966)

What is the role of career orientation and marriage orientation in the vocational development of college women?

POPULATION AND SAMPLE

The sample included 30 female sophomore, junior, and senior students at Indiana University in the spring of 1960. The 30 were selected from a population of 180 females representing five schools, including education, arts and sciences, music, business, and health, physical education, and recreation.

The students were selected and divided into three groups, on the basis of their scores on the Career and Marriage Attitude Inventory (CMAI). The CMAI was composed for two scales—career and marriage. Ten females who scored at least one standard deviation above the mean on the career scale were called Group 1 (high career). Group 2 (high marriage) was selected in the same way, but using scores on the marriage scale. Group 3 (mixed) contained students who scored within one standard deviation above the mean on both scales.

INSTRUMENTATION AND DATA

A structured interview was given to each female student. The interview centered around four important areas of career development: key figures, vocational preferences work experience and future plans.

Other data were collected from college records and the Strong Vocational Interest Blank for Women (SVIB-W).

DESIGN AND ANALYSIS

Three judges ranked each female on the basis of the interview using three scales: key figure influence, emergence and persistence of occupational choices, and work experience.

Inter-judge agreement was determined using the coefficient of concordance formula.

Chi-square was used in analyzing the groups, in terms of the number who were above and below the means for the variables of grade point average (GPA) and the SVIB-W scales.

RESULTS AND DISCUSSION

1. No significant differences were found between groups for judge-rated variables.
2. No significant differences were found between groups in terms of students above and below the mean GPA.
3. There was a tendency (thus, not a significant finding, statistically) for females who scored high on the career scale to have more interest scores above the mean on the SVIB-W.
4. Females who scored high on the marriage scale scored higher on the more domestic-type scales of the SVIB-W, such as teacher, housewife, nurse, etc.

COMMENTS

The procedures and explanations in the report of the study leave some important questions unanswered; i.e., What were the effects of college major, scholastic level, etc., on the various SVIB-W scores? Perhaps, this study is best interpreted as a validation study for the CMAI. The original question posed, concerning the role of career orientation and marriage orientation in the vocational development of college women, is mainly left unanswered, even if one accepts the SVIB-W as a measure of vocational *development*, rather than vocational interest *status*.

21.

Vocational Choice, College Choice, and Scholastic Success of Superior Students

Sanborn, M. P. (1965)

How are superior students' vocational goals, educational goals, reasons for selecting particular colleges to attend, and success, or lack of success, in the first semester of college related?

POPULATION AND SAMPLE

The total population consisted of all students from the Research and Guidance Laboratory for Superior Students at the University of Wisconsin who graduated from high school in 1961, 1962, and 1963. These superior students were selected from 90 participating high schools throughout Wisconsin. The faculties of the cooperating schools selected ninth grade students on the basis of multiple criteria developed by the laboratory staff. In the past, the 1,800 students selected had been among the highest 5%, in terms of mental test scores for their age range. Each year, the students visited the Research and Guidance Laboratory for testing and other activities. They were selected from the total population in two ways. All students earning first semester college grade point averages (GPAs) below 2.00 (on a 4-point scale) were included in the study as group B, low achievers (N = 30). A random sample of 30 students was taken from all those who had earned a first semester college GPA of 2.00 or better. They comprised group A, high achievers.

All students in this study were not enrolled at the same college or university.

INSTRUMENTATION AND DATA

High school and college grades were collected from student records. Information on the students, collected at the laboratory over a period of years, including vocational plans, educational plans, and the student's own criteria for college choice, were included in the study. A questionnaire and personal interviews during the freshman year at college sought such information as development of educational and vocational goals since leaving high school.

DESIGN AND ANALYSIS

Analysis of scholastic performance involved averaging grades on all academic work for members of each group. No correction was made on the variability of the difficulty of instruction at the schools attended, assuming that effects would be the same across both groups. Group mean GPAs were compared at junior and senior high school level, and college.

During the freshman year, all students were asked to state all their reasons for selecting the particular college they were attending at the time. All stated reasons were counted and classified as follows: (a) specific program (good math department, etc.), (b) general academic features (good laboratory facilities, library, etc.), (c) cost, (d) size of institution, (e) location, (f) reputation, and (g) other reasons (religion, friends, etc.).

Chi-square analysis was used to evaluate the relationship between groups A and B, and the selection or non-selection of college major.

During each year of high school and the first year of college, all students were asked to report their career goals. The answers were classified as follows: (a) specific (electrical engineer, commercial-artist, etc.); (b) area defined (something in foreign language, etc.); and (c) undecided.

Degree of specificity of 10-year goals was determined by the students' responses to such questions as, "What would you like to be doing 10 years from now?" Answers were classified according to the degree of specificity of the response—specific, over defined, or vague.

All 60 students were considered as one group to examine the relationship between decided or undecided vocational goals and the use of academic factors in selecting a college. The students were grouped, on the basis of vocational decision, as either decided or undecided. The college factors were combined, according to whether they were academic or other than academic. Chi-square test of significance was used.

RESULTS AND DISCUSSION

1. At the time of selection in the ninth grade, all students (groups A and B) were considered by teachers as the most promising students in the school. At the end of high school education, group A was significantly higher (.01 level) than group B, in terms of GPA.
2. There were significant relationships between the factors students considered in choosing colleges, and their first semester GPA. Group A tended to mention more often than group B, such factors as specific programs (significant at the .01 level), and general academic features (.05 level). Group B most often tended to mention cost, location, and other factors, such as parental pressure, religion, and friends.
3. There was a significant relationship between college success and the selection of a major field during, or before, the freshman year. There were 28 members of group A, compared with 20 members of group B, who reported selection of a college major by the second semester of their freshman year. Chi-square was significant at the .01 level.
4. There was a significant relationship between scholastic success and the degree of specificity of vocational goals. A relatively high proportion (19 out of 30) of group A had specific vocational goals, as compared to a high proportion (18 out of 30) from group B who were undecided. Chi-square was significant at the .01 level.

The data suggest that scholastic success is related to the length of time the student has identified with an occupation.

5. There was a significant relationship between specificity of 10-year goals and success in college. In group A, 22 out of 30 had specific goals, compared to 6 out of 30 students in group B. Chi-square was significant at the .01 level.
6. The data indicated a trend for students with vocational goals to consider academic factors to a greater degree in the selection of a college than students who were undecided about their career goals. The mean number of factors mentioned by the decided students was 2.4, compared to 1.9 for undecided. Responses concerned with academic factors were 33.6% for the decided group, and 24.0% for the undecided group.

"The number of persons involved in this study was too small, and questions about contaminating factors too numerous, to warrant conclusions based on the results."

Suggestions for later research:

1. Although goal changes were temporary, goals may provide the motivation, and thereby have the same functional effects as permanent goals.
2. Experiments dealing with high-ability underachievers may have better success when focused on helping students with long-range goal setting, than when focused on study skills and adjustment to school.

COMMENTS

If the author, who knows his data best, is reticent to make conclusions based on his results, why were these data published?

If one assumes that the author is just modest, then it appears that high-achieving, high-ability students differ from low-achieving, high-ability students in academic orientation (higher), selection of major field (earlier), and specificity of immediate and 10-year vocational goals (more specific). Questions of causal relationships are not answered by these data. Thus, suggestion two, previously mentioned, may be questioned.

22.

Variables Related to Persistence, Transfer, and Attrition of Engineering Students

Van Erdewyk, Z. M. (1967)

Are certain academic and non-academic variables related to persistence, transfer, and attrition of college engineering students?

POPULATION AND SAMPLE

The sample consisted of 316 of the 430 males enrolled in the College of Engineering at the University of North Dakota. This was 73% of the population, and included all those who responded to a mailed questionnaire. There were 202 freshmen, 133 sophomores, and 95 juniors.

INSTRUMENTATION AND DATA

Information on academic variables, such as scores on American College Tests (ACT), high school grade point averages, and college grades, was gathered from student records in university offices.

A questionnaire was developed to elicit information such as biographical data, students' evaluation of their high school preparation, how students decided to enter engineering, their experiences in college engineering, etc. (The report of the study gave no indication as to whether the questionnaire was pilot tested.)

DESIGN AND ANALYSIS

"Students were classified as persisters, transfers, or dropouts, at each class level, contingent upon their status for the 1966-67 academic year."

Five hypotheses were tested:

Hypothesis 1—"There are no reliable differences in the ACT sub-scores and composite scores when comparisons are made between persisters, transfers, and dropouts."

Hypothesis 2—"There are no reliable differences in the high school grade point average when comparisons are made between persisters, transfers, and dropouts."

Hypothesis 3—"There are no reliable differences in the accumulated grade point average when comparisons are made between persisters, transfers, and dropouts."

Hypothesis 4—"There is no significant relation between the first mathematics course taken, the grades received in college freshmen mathematics and chemistry and the attrition of engineering students."

Hypothesis 5—"Students who have persisted in engineering, transferred from engineering to another academic major, or dropped out of engineering and college do not differ" on the following: (a) biographical variables, (b) their evaluation of their high school preparation, (c) responses to questions relating to their decision to enter engineering, (d) their experiences in the college of engineering, and (e) other variables included in the questionnaire.

"The first four hypotheses were tested by use of the one-way analysis of variance program." An alpha level of .05 was selected to evaluate significance of F ratios. Two-tailed *t* tests were used to test for group differences where the F test was significant.

Two items from the questionnaire (grade the student decided to enter college and grade the student decided to enter engineering) were judged to be appropriate for the analysis of variance statistic. The responses to the remaining items were judged to be appropriate for non-parametric statistical analysis or for tabulation of frequencies.

RESULTS AND DISCUSSION

1. "Freshman persisters had significantly higher ACT mathematics sub-scores than the freshman dropouts; freshman persisters had significantly higher ACT composite scores than the transfers and dropouts; sophomore persisters and transfers had significantly higher ACT social studies sub-scores than the sophomore dropouts; and junior persisters and dropouts had significantly higher ACT mathematics sub-scores than junior transfers."
2. "Freshman persisters had significantly higher mean high school grades than freshman transfers and dropouts; sophomore persisters and transfers had significantly higher mean high school grades than sophomore dropouts; and junior persisters had significantly higher mean high school grades than junior dropouts."
3. The persisters in all three classes had significantly higher accumulative college grade point averages than the dropouts or transfers (or in some cases both) in all three classes.
4. The freshman and sophomore persisters had significantly higher grades in college algebra and chemistry than did the freshman and sophomore dropouts or transfers (or in some cases both).
5. "Some of the principle results of the questionnaire are as follows: The size of the high school graduating class and the students' evaluation of the quality of education they received in high school did not differ significantly for persisters, transfers, and dropouts. A majority of students felt a definite need for their high school to provide them with more information on engineering. A majority of students reported engineering graphics as the most interesting course; English was reported as the least interesting course taken in the engineering program."

COMMENTS

Another approach, specifically a multiple-regression approach, might have been more informative. The relative contributions of the different possible predictors in forecasting persistence could be compared in such an approach.

The dropout category (which was quite uniformly lower on all ability measures) may be misleading, in that several of the students in this category may not have had a choice as to whether they stayed in school or not. Similarly, the transfer students may have been forced to transfer because of low grades (because of lower ability than the persistence group).

23.

College Major Choice and Personal Adjustment

Walsh, W. B. and Russell, J. H., III (1969)

What types of interactions occur between college major choice and personal adjustment?

POPULATION AND SAMPLE

The study concerned a random sample of 124 undergraduates in the Ohio State University residence halls. The sample included third-quarter freshmen—59 males and 65 females.

INSTRUMENTATION AND DATA

The instruments used were the Vocational Preference Inventory (VPI) and the Mooney Problem Checklist. The VPI is a personality and interest inventory. Assuming an individual's choice of occupation is pleasing to him, VPI uses that as the criteria for analysis. The Mooney Checklist requires the individual to respond to a list of 360 problems, and to indicate those that concern him.

DESIGN AND ANALYSIS

Students were classified as congruent or incongruent, depending upon the consistency between selected college major and personality type, as determined by the dominate scale of the VPI. They were then divided into four groups: (a) male congruent, (b) female congruent, (c) male incongruent, and (d) female incongruent. The students were contacted individually by their residence hall counselor, who acted as the experimenter. (The method of administering the VPI was not explained in the report of the study.)

Three hypotheses were established:

Hypothesis 1—No differences between congruent and incongruent students, in terms of group mean scores for adjustment.

Hypothesis 2—No differences between sexes, in terms of group mean scores for adjustment.

Hypothesis 3—No differences between the four groups, in terms of group mean scores for adjustment.

Analysis of variance for unequal numbers was used to test the hypotheses.

RESULTS AND DISCUSSION

1.—Hypothesis 1: The main effect of congruence upon adjustment was significant at the .05 level (incongruent group had the higher mean, indicating they were less well adjusted than the congruent group).

2.—Hypothesis 2: The main effect of sex upon adjustment was not significant (males had slightly higher mean).

3.—Hypothesis 3: A significant (.05) difference was found between congruent and incongruent males, suggesting that congruent males reported fewer personal adjustment problems than the incongruent males. A difference, similar in trend, was found between congruent and incongruent females, but it was not significant.

"The results of this study are consistent with but do not necessarily support Holland's notion that congruent person-environment interactions are conducive to better maintenance of personal stability."

COMMENTS

No tests of reliability or validity have been completed on the Mooney Problem Checklist. Still, many investigators have used and accepted it as a measure of adjustment. To the extent that one can accept the Mooney as a valid measure of adjustment, one can also accept that congruent third-quarter freshmen males at Ohio State University are better adjusted than incongruent third-quarter freshmen males. It seems strange that a random sample of undergraduates living in residence halls should include only third-quarter freshmen. Judgments about how such sampling effects the ability to generalize the findings are difficult to make on a practical basis. Interpretation of the data is made even more difficult, since nothing is known about how the residence hall counselors administered the Checklist and VPI.

24.

Social Class and Initial Career Choice of College Freshmen

Werts, C. E. (1966)

What influence does a composite measure of socioeconomic status level (father's occupation, education, and income) have on the initial career choice of college freshmen?

POPULATION AND SAMPLE

A 12-page follow-up questionnaire was sent to 60,000 college freshmen (1961) who had been included in an earlier study. These 60,000 students were divided somewhat equally across 248 four-year colleges and universities, from which the original sample of 127,212 students were drawn. In the larger institutions, random sampling techniques were used to determine which students received the questionnaire. Males and females were selected in somewhat equal numbers. The percent of return on the questionnaire was approximately 55%. The percentages of responses varied for each institution (20% to 90%), with the highest returns from the more selective institutions. The final sample was composed of 16,141 males and 14,417 females.

INSTRUMENTATION AND DATA

"Information on father's occupation and student's probable future career was obtained from free response items on the initial freshman questionnaire." Father's occupation was coded into one of 18 categories, ranging from farmer to professor. Probable future occupations were categorized into one of 15 career categories for men, or 11 career categories for women. In all cases, males and females were treated separately. The data on father's occupation were further classified into one of four groups, on the basis of father's education level: Group 1 (high school diploma or less), Group 2 (some college), Group 3 (college graduate), and Group 4 (advanced degree).

DESIGN AND ANALYSIS

Cross tabulations of career choice with father's occupation were made. Tables were constructed from the cross tabulations by converting the number of persons in each cell of the cross tabulation to a percentage of all those choosing that particular career.

"If father's occupation did not influence career choice, the percent of sons or daughters in each cell would be the same as the percent of fathers having that particular occupation . . . for example, 3.82% of the males were sons of clerical workers. If careers were selected randomly with respect to father's occupation, 3.82% of those in each career choice would be sons of clerical workers. Insofar as the percentage of sons of clerical workers in any career choice is statistically different from 3.82%, it may be hypothesized that being the son of a clerical worker does influence the choice of that career."

Results were expressed in terms of percentages and standard deviations of percentages.

RESULTS AND DISCUSSION

1. A statistically higher percent of the students from the lower socioeconomic status group (Group 1) chose careers as engineers, teachers, chemists, accountants, clergyman, and farmers (for men), and teachers, nurses, and laboratory technicians (for women), than would have been expected according to the percent of fathers in these occupations. The differences were significant at the .05 level. The same careers were chosen less often by students from Group 4 than would be expected.

2. Careers chosen more often than expected by Group 4 were: physician, lawyer, college professor

(for men), and social worker, physician, psychologist, and housewife (for women).

COMMENTS

Although the findings of this study seem to be consistent with other studies, in terms of career choices in relation to socioeconomic status, there are a number of factors that tend to weaken the study. These factors include: (a) the sample may have been biased, since the greater return of questionnaies came from the more selective schools; (b) the rationale for the assumption of equal percents of fathers and sons representing a given occupation was not clear; and (c) with 30,000 students, it does not require a great difference to be considered statistically significant at the .05 level.

A 12-page questionnaire was used, but no explanation of the data collected by it was given in the report of the study.

25.

Career Changes in College

Werts, C. E. (1967) Study #1

What influence does socioeconomic status have upon career change in college?

POPULATION AND SAMPLE

For follow-up on career choice a sample of 30,000 was selected from 127,000 freshmen students representing 248 heterogeneous colleges. Students were grouped according to expressed career choice at the end of their freshman year. Only those selecting careers represented by at least 150 students were included in the study. The majority of females chose a single career—teaching; therefore, all female students were excluded from the study. The male careers included: engineers (N=1,999), teachers (N=1,816), physicians (N=1,576), businessmen (N=928), lawyers (N=869), chemists (N=484), accountants (N=420), and physicists (N=391).

The students were further classified as: "loyalists" (career choice identical from beginning to end of freshman year); defectors (those who gave specific career, then changed to another career); and recruits (those who listed another career initially, then changed to a specific career).

INSTRUMENTATION AND DATA

At the beginning of the freshman year, each student completed a short questionnaire concerning his high school grades, father's level of education, father's occupation, and his own probable career choice.

At the end of the freshman year, the follow-up sample received a similar questionnaire by mail. Grade point average for the freshman year was used as a measure of academic achievement. (The rate of return on the questionnaire was not included in the report of the study.)

DESIGN AND ANALYSIS

Two hypotheses were tested:

Hypothesis 1—students switching out of medicine and law should be of lower socioeconomic status than those who remain; those who switch out of engineering, teaching, chemistry, and accounting should be of higher socioeconomic status than those who remain; and there should be no differences for physics and business.

Hypothesis 2—students switching out of physics, chemistry, medicine, law, and engineering will be of lower ability than those who remain; and those who switch out of teaching, accounting, and business will be more able than those who remain.

Comparisons were made between loyalists, recruits, and defectors for each career choice, using the two measures of ability (high school and freshman grades) and level of father's education (the measure of socioeconomic status).

Chi-square was used to test the significance of difference between percentages of loyalist and defector students choosing father's occupation.

RESULTS AND DISCUSSION

1. The results of comparing the level of father's education between the loyalists and defectors supported Hypothesis 1. That is, those who remained in the physician and lawyer careers were from a higher socioeconomic status than those who left; and those who left teaching, engineering, etc. were of higher socioeconomic status than those who stayed. With mean scores ranging from 4.3 to 2.9, the largest difference observed for any comparison was 0.4. (No test of significance was indicated in the report of the study.)

2. The results of the comparisons between loyalists and defectors, using the two measures of ability, showed that those who remained in careers of physicist, chemist, physician, engineer, and lawyer were of higher ability than those who left. The mean scores ranged from 5.1 to 6.6 for high school grades, and 2.5 to 3.8 for freshman grades. The largest difference between loyalists and defectors on high school grades was 0.5 for physician. The largest difference for freshman grades was 0.8 for physicist. Students leaving teaching had slightly more ability than those remaining; accountants who left had less ability; and businessmen were mixed. (No test of significance was indicated in the report of the study.)

3. Chi-square showed only two significant differences between the percentages of loyalists and defectors by father's specific occupation. Significantly more (.05) farmers' sons stayed in farming than left, and significantly more (.05) businessmen's sons stayed in business.

COMMENTS

Without tests of significance, it is difficult to know how to interpret Results 1 and 2, especially in the light of the meager differences noted in 3.

26.

Career Choice Patterns

Werts, C. E. (1967) Study #2

What are the effects of high school grades and father's level of education on the career choices of college freshmen?

POPULATION AND SAMPLE

The sample of 127,212 college freshmen included almost the entire population of freshmen men and women at 248 four-year colleges and universities in the fall of 1961. The sample was about one-sixth of all freshmen entering four-year colleges and universities that year. The institutions were heterogeneous in size, type, and quality. Because the sample was drawn only from four-year institutions, the number of lower ability students included may not be proportional to their occurrence in the general population.

INSTRUMENTATION AND DATA

Each student filled out a short biographical information form asking for his high school index and his father's level of education.

DESIGN AND ANALYSIS

Students were sorted into career categories. Career choices were rank ordered according to the father's level of education and the student's high school index. Part of the study was designed to determine if the father's level of education differences between career groups might be explained in terms of high school index differences, and vice versa. Controls were applied which adjusted father's level of education mean scores for the influence of high school index, and vice versa.

RESULTS AND DISCUSSION

1. Only minor differences were detected between mean values of father's level of education, with and without the controls for high school index, suggesting that father's level of education differences cannot be accounted for by differences in high school index, and vice versa.
2. Ranking of careers by high school index was consistent with results of previous studies. There was a positive relationship between high school index and level of occupational choice. (No statement of significance was given in the report of the study.)
3. Ranking of career choices by level of father's education was also consistent with previous findings. Those students who chose careers such as doctor, lawyer, social scientist, and similar choices had fathers who were above the mean level of education. Those who chose teaching, engineering, and so forth, had fathers with a level of education below the mean.

COMMENTS

The size of the sample used in this study certainly lends weight to the results. The results, as stated by the author, were consistent with the findings of other researchers.

27.

Paternal Influence on Career Choice

Werts, C. E. (1968)

Does the occupation of a father influence the career choice of his son?

POPULATION AND SAMPLE

The sample included 76,015 males entering 246 four-year colleges and universities in the fall of 1961. In most cases, all entering freshmen males of each institution were included in the study. The colleges and universities were selected to be representative of most colleges and universities, in terms of size, geographic location, quality, private or public, and socioeconomic status of entering students.

One disadvantage of this type of study, due to the nature of the sample, is that low socioeconomic students will tend to be excluded from the sample, and the results of the study will not generalize to this segment of society.

INSTRUMENTATION AND DATA

Each student was asked to complete a short questionnaire asking for his probable future occupation and his father's occupation.

DESIGN AND ANALYSIS

The probable future occupations were coded as teaching, medicine, or engineering. The fathers' occupations were coded as low socioeconomic status (manual labor and blue collar jobs), semiprofessional (white collar positions), and professional. Fathers' occupations were also differentiated within these general categories, into groups such as medicine, engineering, etc.

Results were expressed in terms of percentages of students choosing a given career (teaching, engineering, medicine) and whose fathers represented specific occupations within the three main groups.

RESULTS AND DISCUSSION

1. The percent of students who chose teaching was highest for those whose fathers were coded as low socioeconomic status. The percent who chose teaching was lowest for those students whose fathers were coded as professionals.
2. In general, students who chose engineering were equally represented from the three levels of fathers' occupations. More students (24%) whose fathers were engineers chose engineering than did those whose fathers were not engineers.
3. The students whose career choice was medicine, predominately came from the group whose fathers were coded as professional. Forty-one percent of the students whose fathers were physicians, also chose to enter medicine.
4. "Three broad types of occupations appear to be passed from father to son. The first two types correspond closely to the SVIB Physical Science and Social Science groups; the third includes only medical occupations. . ." (Many other results were reported, but these appeared to be the most significant.)

COMMENTS

As hinted by the author, the sample size made adequate handling of the data impractical. This could have been easily rectified by selecting a random sample of students.

The rather gross categorizing system used for students' career choice and fathers' occupations may have obscured many interesting relationships.

Further questions need answering before the value of these data can be determined. What percentage of students change their career-choice during college?

Is this percent different within groups of students stratified by fathers' occupations?

28.

Determinants of Changes in Career Plans During College

Werts, C. E. and Watley, D. J. (1968)

What variables determine changes in, or adherence to, career plans during college?

POPULATION AND SAMPLE

The population consisted of sophomores in United States colleges (year not given). The sample was not described, since this study involved the re-analysis of data collected in the national studies by Charles Werts "Career Changes in College," *Sociology of Education*, 40 (Winter 1967), pp90-95 and by James A. Davis, *Great Aspirations*: *Volume I*, Chicago: National Opinion Research Center, 1963.

The sample consisted of 58,000 males and 51,000 females, for a total size of 109,000 students.

INSTRUMENTATION AND DATA

All data were obtained from Werts' study. The variables used were: father's education, high school grade average (HSG), National Merit Scholarship Qualifying Test scores (taken as a junior in high school), and college grade average (freshman year). A questionnaire (given to students as entering college freshmen, and again one year later) was used by Werts to determine initial career field choice, and career field choice one year later. Information on college grades was also elicited by means of the questionnaire.

(Forty-eight career fields were established, but not listed in the report of the study.)

DESIGN AND ANALYSIS

The data were analyzed to determine extent of career change during the freshman year, and how this change related to the four independent variables (HSG, father's education, college grades, and National Merit Scholarship Test).

An F ratio was computed to measure the ratio of the variance of all career fields means, to the average within-field variances on each trait (variable).

RESULTS AND DISCUSSION

1. The F ratio of average variances of National Merit Scholarship Tests decreased between freshman and sophomore years, indicating less within-field homogeneity. (This assumes that the total variance on a single trait is fixed.)

2. The F ratio of between-field to within-field variance, in the high school grade average trait, decreased between the freshman and sophomore years.

Both of the above findings run directly counter to a "birds of a feather" theory, which says that increasing homogeneity takes place in career fields, and that deviants tend to leave a particular field, while students with traits characteristic of the field enter.

3. The F ratios for the remaining two traits—freshman college grade average and father's education—increased between freshman and sophomore years (except for female students in the father's education trait, which decreased). This would tend to support the "birds of a feather" theory.

"These F ratios are relevant only in regard to a general tendency towards greater or lesser homogeneity across all fields."

COMMENTS

These findings seem a particularly meager yield from a sample of 109,000 students. None of the data presented appear directly related to the major question raised in the title. Certainly, a "birds of a feather" hypothesis is an over simplified approach.

The sample of factors which may influence career change was rather narrowly conceived. A more widely based sample of measures, or a smaller sample of students, would probably have led to more important results.

The finding that two independent and fixed characteristics, such as the report of one's past grade average or father's occupation, would become increasingly heterogeneous with the passage of time (even though the passage of a year would not be expected to influence such variables to any great extent—both variables were fixed at the time of the first sampling) is problematic.

29.

An Exploration of the Prestige Values of College Majors

Zytowski, D. G. (1966)

What influences do the prestige values of various college majors and minors exert upon the process of career decision making?

POPULATION AND SAMPLE

"A random and not necessarily representative sample of undergraduate Iowa State University students were surveyed." About 3% of the entire undergraduate population was included in the study (N = 261).

INSTRUMENTATION AND DATA

A specially designed questionnaire was used to collect student opinions. The National Opinion Research Center (NORC) method was used to rank 30 college majors on the basis of student-perceived prestige. (A description of the NORC method was not included in the report of the study.)

DESIGN AND ANALYSIS

The questionnaire was distributed through the residence hall counselors. Three forms of the questionnaire were used to minimize the effects of order of presentation of the various college majors. A response of, "I don't know," was not allowed. Only one questionnaire was improperly completed,

Index numbers were computed for each college major. "A rank correlation between prestige values of the majors and of their equivalent occupations rated by the NORC study was computed."

It was hypothesized that some of the prestige of a college major may result from the difficulty of the instruction. To consider this, a rank correlation was computed between prestige indices and the mean grade of the participating students in the corresponding introductory freshmen courses. "A similar comparison was made with the ability of people employed in equivalent occupations. . . ." Since some undergraduate majors have no equivalent occupation (e.g., foreign languages), only 10 such comparisons were possible.

Self-ratings and peer ratings of the students' chosen majors were compared.

RESULTS AND DISCUSSION

1. A serial ranking of majors showed the sciences (chemistry, physics, and math) to be the most highly regarded as a group. Next in prestige were: the arts (fine arts, drama, architecture, English, art history), followed by the social sciences (psychology, sociology, economics), then the humanities (history, religion, philosophy) and education, which as a group, showed the least amount of prestige.
2. Correlational analyses of prestige ratings showed a strong positive relationship between prestige of a major and the intellectual ability, as measured by freshman grades of those persons enrolled (significant at the .05 level).
3. No significant correlations were found between either prestige of occupation or average grade and prestige of college major.

COMMENTS

The bias of the sample must be considered in interpreting the results of the serial ranking of occupations. All judgments by the students may have been biased by the reputation of various departments on the Iowa State campus, or by the differences in the recruitment procedures of the various departments. Thus, the generality of these findings is questionable.

KNOWLEDGE OF WORK

30.

The Image of a Large Research and Development Corporation as Held by Summer Hires

Anonymous (1964) Study #5

How do part-time (summer) employees perceive the role of the employee with a large research and development corporation? How does the "employee image" held by the summer employee compare with the "ideal candidate image" held by a sample of college recruiters from the same corporation?

POPULATION AND SAMPLE

The sample included 45 technical summer employees hired in 1962. On the last day of employment with the company, the participants were administered a series of personality and personal value tests.

Two samples of company-employed college recruiters were also included in the study. During a series of recruiter conferences, 35 campus recruiters were selected and administered a series of personality and personal value tests. In October 1964, another group of 23 campus recruiters completed the same tests. (No population size of summer employees or campus recruiters was included in the report of the study. No description of the sampling techniques was included.)

INSTRUMENTATION AND DATA

The instruments used in this study were a series of personality and personal value-type tests. These tests measured 14 traits: cautiousness, original thinking, personal relations, vigor, ascendancy, responsibility, emotional stability, sociability, conformity, attention, benevolence, independence, leadership, and support. The summer hires were administered the tests under two sets of instructions. The first time they took the tests, they were asked to be honest and frank in describing themselves. The second time, they were asked to take the tests based on what they know about the company, and to describe themselves to meet the expectations of the company.

The two samples of campus recruiters were asked to take the same series of tests and respond in the way they would like the "ideal technical candidate" to respond.

DESIGN AND ANALYSIS

The four sets of scores were compared for each of the 14 traits measured. Results were reported as percentiles. Correlations were computed between the "ideal technical candidate" described by the campus recruiter and the false employement image of the summer employees. (The technique used in correlation was not explained in the report of the study. It was probably rank-order.)

RESULTS AND DISCUSSION

1. Summer hires raised their scores on 11 of the 14 traits in an effort to meet what they thought were the expectations of the company. Scores decreased for attention, independence, and need for support or encouragement.
2. "The correlation between the faked employment-self response of the summer hires and the ideal technical candidate expectations of the recruiters in 1962 was .87. . ."
3. No significant differences were found between the expectations of the two recruiter samples.
4. The major findings in this study were the swiftness and accuracy with which the summer employees were able to determine exactly what the company was looking for in its employees.

COMMENTS

The descriptions of the sample, instruments, and design of this study were very incomplete; therefore, it is difficult to accept it with full confidence. A statement in the findings makes the reliability of the instrument seem doubtful. "The summer hires tend toward Original Thinking and Vigor but would display more than they really have of these two characteristics when applying for a job." The point is, how can a person display more 'Original Thinking' than he is capable of having?

The apparent ability of the summer hires to respond (falsely) in such a manner that they match the expectations of college recruiters suggests the need for some kind of method or procedure for assessing the actual characteristics of the potential employees.

31.

Status Images . . . Their Nature and Relation to Selection of College Majors and Occupations

DeLora, J., Harder, D. F. and Kidwell, W. M. (1964)

How do status images function with respect to the selection of college majors and occupations?

POPULATION AND SAMPLE

The sample included a 5% stratified random sample of San Diego State College students (N=623). The sample was stratified using class standing, sex, and college major as criteria.

INSTRUMENTATION AND DATA

The questionnaire included such areas of investigation as: social class background; history of college majors selected, or any anticipated changes; reasons for selecting present major; major most desired and the basis for such choice; vocational aspirations in terms of job type, status, etc.; status rankings of occupations; and status rankings of college majors.

DESIGN AND ANALYSIS

The over-all status ranking of college majors was determined by combining the rank-order scores based on most respected majors and least respected majors. The two rank-order distributions were arranged in opposite order (the most respected major was designated number 1 on one distribution and number 49 on the other).

Responses were totaled and reported as frequencies and percentages.

RESULTS AND DISCUSSION

1. Results of over-all ranking of college major showed pre-medical to be the most prestigious, followed by engineering, pre-professional, pre-legal, and science. The last major in the rankings was library science.

2. Reasons listed for major being most respected were: intellectual difficulty (36.0%); societal status connotations (22.7%); school emphasis, including college well-known (11.6%), and others.

3. Reasons listed for major being least respected were: intellectual difficulty (37.6%), societal status connotations (9.7%); non-intellectual connotations (17.2%). Other reaons accounted for 22.1%, leaving the rest divided between occupational preparation (6.2%), school emphasis (3.3%), and abnormal membership (3.0%).

4. While intellectual difficulty was listed by 38.5% of the people as the reason for engineering's status, school emphasis was listed by 25.0% of those selecting education as the most respected major.

COMMENTS

Although large, the sample cannot be looked upon as representative of college students in general. These results may be the product of some bias of the sample caused by departmental reputations at San Diego State College. A different institution with different biases might produce different results.

32.

Industry Image: Its Role in M.B.A. Recruitment

Hise, R. T. and Ryans, J. K., Jr. (1969)

What is the effect of the image of industry on the recruiting of M.B.A.s by individual companies?

POPULATION AND SAMPLE

"The study was completed at the University of Maryland, College Park, Maryland. Included among the respondents were some 68 full-time M.B.A. students." (The report of the study provided no further description of the sample.)

INSTRUMENTATION AND DATA

The semantic differential technique was used to develop the images of three industries: automotive (durable goods), pharmaceutical (non-durable goods), and insurance (service). The students were presented with a series of bipolar, job-related adjectives. They were asked to indicate their attitudes concerning each pair on a 7-point scale ranging from +3 to -3. The list of job-related items rated by the student included: compensation, advancement, company-or-customer-minded, job security, prestige, growth potential, training opportunities, management philosophy, profit, and fringe benefits. These ratings were repeated for each industry mentioned. In addition, students were asked to rank eight industries (including the three already mentioned) in terms of compensation, advancement, and over-all desirability.

DESIGN AND ANALYSIS

Mean ratings were computed for each of the three industries on each of the items. Profiles were constructed and visual comparisons were made. (In the report of the study, no mention was made concerning the use of statistical analyses.)

RESULTS AND DISCUSSION

1. Rankings of eight industries, on three job-related items, showed automotive to be first in all three rankings, followed by petroleum, steel and metals, and pharmaceutical, in that order. The other four industries (public accounting, insurance, utilities, and government) showed considerable variation in rankings between fifth and eighth place.

2. Visual comparison of the three profiles showed great similarity between the automotive and pharmaceutical industries. The biggest difference between the two groups was on training opportunities, with pharmaceutical scoring about .50 and automotive about 1.25.

The insurance industry was consistently out-scored by the other industries, except on training opportunities where it was above pharmaceutical by about .10.

3. Insurance ratings fell slightly below 0 (less than -.25) on prestige and company-customer-minded.

COMMENTS

Caution should be used in generalizing these results, since the sample was not necessarily representative of any population outside the University of Maryland. Also, no statistical tests of significance were used. It may be that these are only chance results and would not be replicated using another population.

33.

Vocational Choice and Professional Experience as Factors in Occupational Image?

Marks, E. and Webb, S. C. (1969)

What is the relationship between work experience and change in occupational image?

POPULATION AND SAMPLE

The sample included 674 students and professionals divided into three levels of experience (freshman, senior, professional). It included three main groups: industrial management, electrical engineering, and a subsample of 150 male freshmen students from another institution who rated 95 traits for their social desirability (SD). The breakdown of the industrial management group included: 50 freshmen (who engaged in self-description); 65 freshmen, 84 seniors, and 81 professionals (who engaged in describing a typical number of their particular profession). The electrical engineering group included: 50 freshmen (who engaged in self-description); 58 freshmen, 61 seniors, and 75 professionals (who described the typical member of their profession). (Techniques of sampling were not explained in the report of the study.)

INSTRUMENTATION AND DATA

The individuals were administered a 95-item trait-description instrument. The 95 items were designed to describe a wide variety of behaviors or characteristics that might be exhibited by an individual in connection with his occupational endeavors. Some of the items were: high intellectual ability, self-assurance, flexibility of thought, social immaturity, good control of impulses, and proneness to anxiety.

The professionals who described the typical member were asked to rate each item, according to its importance to an individual in achieving success in an occupation. The rating used a 9-point scale; 1 (great importance in contributing to failure), through 5 (no importance), to 9 (great importance in determining success).

The two groups of freshmen responding to the items as self-descriptors were asked to rate each item using a 9-point scale, ranging from very definitely not characteristic of me, to very definitely characteristic of me.

DESIGN AND ANALYSIS

A 2x3 cross classification of individuals was used, based on occupational area or title, and level of experience. Two additional groups included the self-descriptor freshmen. The first step in analysis of the data involved obtaining scale values on each of the 95 items separately, for each of the eight groups. Using these scale values, the trait descriptions falling into the two categories on extreme ends of the scale (Categories 1, 2, and 8, 9) were selected for further treatment, using principle components analysis on all items listed in common, for all groups within an occupation.

"To explore the notion of common occupational stereotype among the four groups representing either of the occupational titles, the percentages of item overlap, and rank order correlations . . . were computed for. . .groups within an occupational title."

The 95 items had been rated by an independent sample of 150 freshmen. Rank order correlations were computed between these values, and those values obtained by each of the four groups in the two occupational titles.

RESULTS AND DISCUSSION

1. For the three levels of professional experience in industrial management (freshmen, senior, and professional) there were 43, 47, and 46 items, respectively, that were listed as being important or descriptive of the person in the field. Thirty-five of these items were common to all three groups. Principle components analysis showed no significant results, suggesting that all three groups attributed a common profile to the typical man in the occupation.

2. A similar series of analyses were completed for the electrical engineering groups. It appeared that for freshmen, seniors, and professionals, that 31, 33, and 36 items, respectively, were important. Of these, 29 items were common to all three groups. Results also indicated a similar profile of the typical man from each of the three groups.

3. Rank order correlations of .69 and .72 showed substantial correspondence between the way a freshman student describes himself, and the common image ascribed by individuals at varying levels of professional experience, to the typical occupational incumbent.

4. Analyses of the traits listed as important by both occupations showed 20 items common to both groups. Rank order correlations of the 20 items was .20, suggesting that the images for the two occupations were quite different.

5. Rank order correlations of .53 and .43 were found between SD (social desirability of the traits), and the typical person's ratings of industrial managers and electrical engineers, respectively. Similar values, .64 and .61, were found between SD values and self-description values of freshmen in industrial management and electrical engineering, respectively.

COMMENTS

This appears to be a well designed study. This is important, in light of the fact that the results are inconsistent with the findings of other studies that have noted considerable changes in the occupational images held by freshmen, compared to the images held by seniors and professionals. Perhaps the explanation of these inconsistent findings lies in the observation that different occupations were involved. Some occupations may be less known or more ambiguous than industrial management and electrical engineering. Freshmen who are attracted to the field may not have an accurate perception of what the field is like. Thus, as familiarity with the field increases, the image one has of the field would change.

34.

Analysis of Subjective Occupational Structures

Simmons, D. D. (1967)

Is there any advantage, in the career counseling process, in allowing a student to sort occupations from a self-developed list and classify them according to their acceptability to him?

POPULATION AND SAMPLE

The sample consisted of 30 male students who sought career counseling at the Oregon State University Counseling Center. The average age of the students was 19.8 years.

INSTRUMENTATION AND DATA

The instrument used was a list of all known occupations the student could name in 20 minutes.

DESIGN AND ANALYSIS

The students were asked to group the occupations from their own list as: would choose, would not choose, and not sure. They were not required to group all occupations, nor were they required to limit an occupation to only one group. The students were also asked to state their reasons for grouping the occupations as they did.

Means, standard deviations, and ranges were computed for the three groups (would choose, would not choose, and not sure) on each of three variables: number of titles of occupations, number of categories of common occupations, and average number of titles per category. A Pearson product-moment correlation coefficient was computed to determine the relationship between the number of occupation titles and number of categories of common occupations.

RESULTS AND DISCUSSION

1. Correlation between number of titles and number of categories was significant at the .01 level ($r = .48$), indicating a general productivity factor.
2. A significantly greater number of would not choose titles, compared to either would choose or not sure, were listed (.01).
3. Significantly more would not choose categories, than would choose or not sure, were listed (.05).
4. These results question the assumption that people have a more refined structure of occupations in the area from which they would choose, compared to the area from which they would not choose.
5. Counselees have ruled out more occupations than are acceptable.
6. Two counseling problems emerged: (a) some students showed confusion in their organization of occupations; i.e., excessive overlapping of occupations in many categories; and (b) some students showed an imbalance of alternatives: i.e., all of their occupations were either would choose or would not not choose.

COMMENTS

Several things are not known about the students. Did they seek counseling, or were they referred? What were their areas of study? How much access to occupational information did they have?

A correlation between the number of items listed and the number of different categories of the items listed is a common finding, regardless of the nature of the items. In this case, it is not surprising that students who listed a large number of occupations also listed more different kinds of occupations than those who listed only a few occupations. It would be expected that more of the occupations listed would not be chosen than would be chosen. One usually aspires to only a few occupations of the thousands which could be listed. The number of occupations which would not be chosen is so large that one would expect these to dominate the list.

The two counseling situations which emerged—confused organization of occupations and the imbalance of alternatives—appear to hold the greatest potential of being important findings from the data of this experiment.

CHARACTERISTICS

35.

An Investigation of Motives, Values, and Goals of Business Administration and Engineering Students as Related to Scholastic Achievement

Anonymous (1964) Study #1

What are the motives, values, and goals of business administration and engineering students as related to scholastic achievement?

POPULATION AND SAMPLE

The sample was composed of 200 graduating seniors in the schools of engineering and business administration at five major colleges and universities in the southwestern United States. There were 102 business administration majors and 98 engineering majors. Included in the engineering group were a few mathematics, chemistry, physics, and geology majors.

INSTRUMENTATION AND DATA

Three questionnaires especially designed to measure attitudes, values, and goals were used. One questionnaire was a job importance survey. It was composed of 77 items dealing with various aspects of the job situation; for example: make a lot of money, work for a nationally known company, have a supervisor who thinks as you do, have a great deal of autonomy, etc. Each item was rated according to how important the student perceived that item in a job situation. Rating was done on a 5-point scale.

A second questionnaire required each student to rank, in order of importance as perceived by him, 10 goals and values. This list included: professional recognition, social service, competitive spirit, desire to be well thought of by superiors, professional accomplishment, scientific curiosity, desire to win respect of co-workers, money, personal pride, and a day's work for a day's pay.

The third questionnaire was the job importance comparisons. This contained 10 typical statements dealing with different aspects of the job situation. These 10 statements were paired and compared in all possible combinations (45). The students were asked to select from each set of comparisons the statement which was of greatest importance to him. One point was given each statement each time it was chosen. A maximum possible score for any single statement was nine. The statements included "in a small company," "where strict adherence to policy is not necessary," etc.

Each student was assured that his anonymity would be preserved. All testing was done at the individual schools with each student paid $2.00 per hour of testing time. Completion time for testing ranged from 45 to 75 minutes.

Cumulative college grade point averages (GPA) were taken from student records.

DESIGN AND ANALYSIS

The design included 97 independent variables and two dependent variables—college major and cumulative college GPA.

Coefficients of correlation were computed between each of the 97 independent variables and the two dependent variables. Independent variable intercorrelations were computed. Factor analyses were performed on all variable intercorrelations where possible. Tests of significance of the differences between ratings of each statement made by the business and engineering students were made.

RESULTS AND DISCUSSION

1. Engineering students rated statements dealing with autonomy, technical self-development, involvement in job details, and professional recognition significantly higher than did business administration students.

2. Business administration students rated statements about personal status, salary and benefits, company reputation, and administrative efficiency significantly higher than did engineering students.

3. The correlation results showed high GPA engineering students were characterized as individuals who describe themselves as research-oriented and interested in a casual environment with economic security. High GPA engineers were not interested in competitive job situations where they would be doing applied-type work.

4. The correlation results showed that the high GPA business administration students described themselves as economically oriented, attaching importance to a position where they could develop themselves professionally, and seeking an administratively effective company where they had a good chance for promotion to a supervisory capacity.

5. Statements rated by both engineering and business administration students as being the most important to them in a job fell into two general areas: a job where they can could use and broaden their intellectual abilities, and a job where they had freedom of expression and competent supervision.

6. Statements rated most important by engineering students indicated that they highly valued a job in which they could be engaged in technical endeavors, supervised by competent individuals, and not bothered by administrative details.

7. Statements rated most important by business administration students indicated that they highly valued a position offering job security and personal status.

8. The factor analysis of the variable intercorrelations and correlations with GPA for the engineering students identified six career motivation syndromes: (a) importance of status achieved by being an administrator, (b) importance of a technical atmosphere which allows research activity and self-development, (c) importance of an administratively efficient organization, (d) importance of tangible status, (e) importance of economic security, and (f) importance of autonomy.

9. Factor analysis for the business administration students identified seven syndromes of career motivation: (a) importance of administrative efficiency, (b) importance of autonomy, (c) importance of a materially secure environment, (d) importance of status which can be achieved by becoming a supervisor, (e) importance of freedom of expression, (f) importance of self-development, and (g) importance of administrative research.

COMMENTS

The results of the factor analyses are probably quite unstable since the number of variables was nearly the same as the number of students in each group. This situation is *not* ideal for factor analysis.

36.

Vocational Certainty and Indecision in College Freshmen

Ashby, J. D., Wall, H. W. and Osipow, S. H. (1966)

Do selected personality and demographic factors differentiate vocationally decided from vocationally undecided students?

POPULATION AND SAMPLE

The sample consisted of 238 first-term freshmen at Pennsylvania State University (PSU). The students were divided into three groups based on certainty of educational-vocational plans. Decided students (D) expressed considerable decision about their plans (N = 108). Undecided students (U) experienced difficulty in selecting a program to enter (N = 29). These students enrolled through the division of counseling at PSU. The third group (T) had tentative plans somewhere between the D and U groups (N = 101).

INSTRUMENTATION AND DATA

The instruments and data used were the Strong Vocational Interest Blank (SVIB), the Bernreuter Personality Inventory (BPI), selected items (academic aspirations, number of siblings, birth order) from a Personal Information Blank (PIB), the PSU Academic Abilities Test, the PSU English Placement Test, the PSU Mathematics Test, size of high school, cumulative grade point average (GPA) through grade 11, SAT verbal and quantitative scores, and parents' reported income.

DESIGN AND ANALYSIS

The students rated themselves using Holland's six personality types as reflected by life orientations: realistic (strong, masculine attention to concrete rather than abstract problems), intellectual (understanding of abstract and ambiguous tasks), social (humanistic, feminine, sociable approach to life), conventional (well-defined technical activities), enterprising (exploitative relations with others), and artistic (individual and artistic expression). A rating scale from 1 to 5 was used—a 5 rating indicated the student believed it described him best.

"SVIB group scores were based on a conversion of the letter grades for each male subject obtained on the SVIB occupational scales." The conversion grade represented an approximation of the raw score for that letter grade.

The data were studied by analysis of variance and discriminant analysis techniques.

RESULTS AND DISCUSSION

1. Comparison of the three groups on all 23 variables using analysis of variance revealed several significant F Test ratios. Group D was significantly higher than either group T or group U on the artistic and intellectual scales of the SVIB, the PSU Academic Abilities Test, the PSU English Placement Test, SAT-verbal, cumulative GPA through grade 11, and first term GPA. Group D was significantly below the other groups on the dependence scale of the Bernreuter.

2. The 23 variables were separated into three groups: (a) personality variables (Holland, BPI scores, academic aspirations), (b) family and school background, and (c) aptitude-achievement variables (PSU, SAT, GPA), Discriminant analysis was used to further evaluate the separation of the groups by the variables. Results showed (a) no differences were likely for personality variables, (b) no differences were likely for family and school background, (c) a highly significant difference (.001) was found between the three groups using aptitude-achievement variables. The differences in the groups were similar in direction but greater in significance when analyzed separately from the other variables.

3. No significant differences were found when only men were compared in each of the three groups.

COMMENTS

Techniques of sampling were not included in the report of the study; therefore, it is not known if the sample was biased on some variables not controlled in the experiment.

The data suggest that aptitude-achievement is connected with vocational decision in some way. From the report, the nature of this relationship is not clear. Are students who are decided on vocational and educational goals characterized by higher GPA, previous achievement, etc.? It is rather surprising that the degree of surety of vocational and educational goals was not found to be related to personality variables. Indecisiveness appears on the surface to be a personality variable.

37.

The Undecided Student— How Different Is He?

Baird, L. L. (1967) Study # 1.

What are some of the differences between students who have decided upon a vocation and those who have not decided?

POPULATION AND SAMPLE

The sample included 6,289 male and 6,143 female college freshmen who were administered the American College Survey near the end of their freshman year in college (1964). The sample included students from 31 institutions, including liberal arts colleges, state universities, and two-year community colleges.

INSTRUMENTATION AND DATA

The measures used in this study included: Holland's Vocational Preference Inventory (VPI) yielding 11 scores (realistic, intellectual, social, conventional, enterprising, artistic, self-control, aggressive, masculine, status, acquiescence), Extracurricular Achievement Record (a score was given for the number of accomplishments), Competencies (a list of activities from which the student selects those he can do well), Preconscious Activity Scale (originality), Interpersonal Competency Scale (originality), Interpersonal Competency Scale, Range of Experience, Intellectual Resources in the Home (level of stimulation), Indecision Scale, Dogmatism Scale, Student Orientation Survey, Potential Achievement Scales (potential in extracurricular achievement), Self-ratings, and Life Goals. There were a total of 118 scales and ratings.

DESIGN AND ANALYSIS

The students were presented with vocational choices from 89 different fields. There were three alternative choices they could make: decided (selected a vocation), undecided, and don't know.

The means on all variables were computed for 5,838 male and 5,848 female students who had decided on a vocational choice, and 451 male and 295 female students who said they were undecided.

Two arbitrary criteria for differences were established: (a) only those differences equal to one-third of the over-all standard deviation were considered, and (b) only those differences equal to, or larger than, one-quarter of the over-all standard deviation were considered meaningful.

RESULTS AND DISCUSSION

Comparisons between mean scores for the decided and undecided groups (treating men and women separately) on each of the 118 variables revealed only six differences for men and four differences for women that met the established criteria. The mean scores for decided men were significantly higher than scores for undecided men on each of the following variables: vocational orientation, academic orientation, drive to achieve, desire to make contribution to science, science potential, and technical competency. The decided women scored significantly higher than undecided women on the following variables: activity in religious affairs, homemaking competency, vocational orientation, and interpersonal competency.

2. The conclusion based on the findings was that no real differences existed between the decided and undecided students.

COMMENTS

It is difficult to understand the two criteria for differences. It appears that criterion "a" is more stringent than criterion "b." If so, it is not clear what "a" means. If "a" is used, then it seems unnecessary to consider "b" (the smaller of the two) as meaningful.

The author concluded there were no significant differences between the decided and undecided groups. This was the wisest conclusion considering that he found differences meeting his criteria for significance in only 10 of 236 cases. The main concern is with the criteria he used for determining significance. Surely, statistical means are available for making probability estimates regarding these differences. The use of statistical criteria in making decisions concerning the significance of the differences found would have made the interpretation of these data easier for readers.

38.

The Undecided Student—How Different is He?

Baird, L. L. (1967) Study # 2

What are the differences in terms of academic aptitude and educational goals of college-bound students who are decided about vocational choice and those who are not?

POPULATION AND SAMPLE

The sample included 59,618 college-bound students who took the American College Testing battery of tests and who were planning to obtain at least a bachelor's degree. The sample represented about 10% of the national population of such students between November 1965 and September 1966. Only 13,695 of the students were undecided about their choice of vocation, compared to 45,923 students who had decided.

INSTRUMENTATION AND DATA

The instruments used in this study included: (1) American College Testing battery (ACT) which yielded four subtest scores (English, mathematics, social studies, natural sciences) and a composite score, and (2) Goals in Attending College (an instrument requiring the students to select their most important goal in attending college from a list of 10 possible choices.

A high school grade point average (GPA) based on the student's reported grades in the four areas covered by the ACT was used also.

DESIGN AND ANALYSIS

Means and standard deviations were computed for the decided and undecided groups on each of the variables and then compared.

RESULTS AND DISCUSSION

The only difference between the two groups that even approached being meaningful (using the criteria established in Baird's Study #1) was the goal for attending college. A higher percentage of decided students listed vocational training as their goal for college.

COMMENTS

Since the same criteria for differences were used in this study as were used in Baird's Study #1, the comments (concerning the criteria) made in review of Study #1 also apply here.

39.

Factors Related to Inconsistent Career Preferences

Osipow, S. H. and Gold, J. A. (1967)

Do students labeled as consistent or inconsistent on the basis of agreement between two administrations of Roe's Occupational Classification System also differ on the Strong Vocational Interest Blank's support for their choices, Scholastic Aptitude Test Scores, or Bernreuter Personality Inventory scores?

POPULATION AND SAMPLE

There were two samples of 101 male freshmen at Pennsylvania State University during the summer and fall terms of 1966.

The career preferences of every 20th student were examined for inconsistencies between first and second preferences, using Roe's system of classification. They were classified as either consistent (C) or inconsistent (I), depending on the number of classifications separating their choices.

INSTRUMENTATION AND DATA

The instruments used were: Roe's Occupational Classification System, the Strong Vocational Interest Blank (SVIB), the verbal and math sections of the Scholastic Aptitude Test (SAT), and the Bernreuter Personality Inventory (BPI).

DESIGN AND ANALYSIS

The variables measured included: agreement between first and second choice, expressed certainty about career plans, parental support of career choices, health and physical disabilities, discrepancy between verbal and quantitative scores of the SAT, degree of support to first and second choice offered by SVIB scores, and scores on the BPI.

RESULTS AND DISCUSSION

1. The data revealed that the C's were more certain about career plans than the I's.
2. The I's were generally enrolled in the more flexible majors, such as the liberal arts and the humanities.
3. The SVIB support for first vocational choice was similar for both the I's and C's.
4. The SVIB offered less support for the second choice of the I's.
5. Only one personality trait (dominance) distinguished between the two groups (C's were found to be more dominant).
6. There was no evidence of familial discord in either group.

COMMENTS

Inconsistency at the freshman level does not seem an unusual or serious condition. Inconsistencies that still exist with upperclass members would appear to be more critical. Perhaps this should be investigated.

It does not seem surprising that people in the humanities and social sciences, who have a wider choice of vocations, would tend to vacillate more than students in more rigid curricula.

In short, the findings are not surprising and their utility is not obvious.

40.

Time of Decision to Study Engineering

Watley, D. J. (1965)

Do engineering students, grouped by when they decided to enter engineering, differ with respect to first quarter GPA, MSAT score, high school rank, perseverance in an engineering program, vocational interests, size of community, and father's education? A secondary set of questions was concerned with whether the number of students entering engineering differed across level of father's education or size of community.

POPULATION AND SAMPLE

The sample consisted of 534 (75%) of the male freshmen entering the Institute of Technology at the University of Minnesota during the fall of 1961. They had attended a two-day orientation program and responded to a short questionnaire.

The students were placed into one of four groups, according to their time of decision to enter the field of engineering. Group 1 decided in elementary school, or had planned on engineering as long as they could remember (N=115); Group 2 decided in junior high school (N=180); Group 3 decided in the first two years of high school (N=166); and Group 4 decided during the last two years of high school (N-73). Other groupings were made, based on the size of community lived in during high school, and the amount of formal education of the father.

INSTRUMENTATION AND DATA

A specially designed questionnaire was used to determine when the student decided to enter engineering as a career, the size of the community he lived in during high school, and the amount of formal education received by his father.

Two tests of ability were used: Institute of Technology Mathematics Test (ITMT), and the Minnesota Scholastic Aptitude Test (MSAT). High school percentile rank (HSR) was used as a measure of achievement at the high school level.

Vocational interests were measured using the Strong Vocational Interest Blank for Men (SVIB).

DESIGN AND ANALYSIS

Freshman first quarter grade point average (GPA) was used as the criterion for academic achievement.

At the beginning of the sophomore year, each student was classified as either remaining in the program (as evidenced by his registration), or a dropout. They dropped out for academic reasons (GPA below C average), or for reasons other than grades.

Means and standard deviations were computed on the following for each of the four decision groups: first quarter GPA, HSR, ITMT, MSAT, and the 45 occupational level scales of the SVIB. Analysis of variance was used to analyze these data.

Chi-square was used to compare the number of students in the four decision groups who registered for classes in engineering at the beginning of the second year, and the number who dropped out.

RESULTS AND DISCUSSION

1. Differences among group GPA means were significant at the .05 level. The mean for Group 3 was significantly below the means of the other three groups at the .05 level.
2. Differences among ITMT group means were not significant.
3. Differences among MSAT means for the four groups were significant at the .01 level. The mean for Group 3 was significantly below the means for each of the other groups. The mean for Group 4 was significantly below the means of Groups 1 and 2.
4. Differences among the means for HSR were significant at the .01 level. Group 4 was significantly below all other groups, in terms of mean HSR.
5. Chi-square analysis of the students who remained, and those who left the program, was significant at the .05 level. Remaining in the program were: 61% of Group 1, 55% of Groups 2, 49% of Group 3, and 41% of Group 4.
6. Comparisons of the four groups on each of the 45 occupational scales, and the interest maturity, masculinity-feminimity, and occupational level scales of the SVIB indicated that six occupational scales had significant F ratios at the .05 level (artist, dentist, carpenter, social science teacher, engineer, and chemist). Although differences were significant, no meaningful pattern in relation to time of decision was established. The engineer and chemist scales were of major importance in this study, since they are more highly correlated with success in engineering. Groups 1 and 2 were higher than Groups 3 and 4 on both scales (the level of significance was not specified in the report of the study).
7. Chi-square analysis of the frequency of students in each group, according to size of community, was significant at the .01 level.
8. Chi-square analysis of the frequency of students in each group, according to father's education, was significant at the .05 level.

COMMENTS

First quarter GPA is not the most valid criterion of success in engineering.

Group 4 appears to be inferior to the other three groups in areas of preparation and commitment, as evidenced by the higher attrition from this group.

The most basic question concerning this study is: what was the author's purpose? If he intended merely to describe engineering students, grouped by when they decided to enter engineering, then to a considerable extent he has succeeded. Students who decide to enter engineering while in high school have lower scores on ITMT, MSAT, and HSR than students who decided in junior high school or grade school. The question of what caused these differences cannot be answered satisfactorily by these data. It not clear what can be done differently in engineering programs or admittance procedures to either counsel students to increase the number entering engineering and/or persevering in engineering, or to change programs to better accomodate students. All of the variables assessed were status variables. The relationships described are interesting, but difficult to apply.

PERSONALITY

41.

Male Career Role and Vocational Choice

Elton, C. F. (1967)

To what extent do personality and scholastic aptitude influence the selection of career roles and vocational choices of college men?

POPULATION AND SAMPLE

"The student population studied consisted of all male freshmen who entered the University of Kentucky in the fall semester of 1965 with complete test data." The total population equaled 1,060.

INSTRUMENTATION AND DATA

"The independent variables were five personality scores and one measure of scholastic aptitude."

The five personality scores were obtained through a factor analysis of the 16 scales of the Omnibus Personality Inventory (OPI). The factors identified were: tolerance and autonomy, suppression-repression, masculine role, scholarly orientation, and social introversion.

The measure of scholastic aptitude was the composite American College Test (ACT) score.

Each student selected, from a list of 83, the one academic major which best described his future vocation. The students were then grouped according to their expressed vocational choice: administrative-political-persuasive (N = 110), business and finance (N = 58), scientific (N = 55), engineering-agriculture technology (N = 229), medical (N = 123), arts-humanities (N = 57), undecided (N = 211), and not listed (N = 211), and not listed (N = 32). Total N = 875.

Students were also grouped according to the career roles they expected to play: researcher-investigator (N = 147), teacher or therapist (N = 61), administrator or supervisor (N = 114), promoter or salesman (N = 53), practitioner-performer-producer (N = 334), not listed (N = 130), and undecided (N = 221). Total N = 1,060. The difference between the size of the two Ns resulted because some students did not respond to vocational choice.

DESIGN AND ANALYSIS

The personality and aptitude predictor were the independent variables in two separate stepwise multiple-discriminant analyses. In the first analysis, the dependent variables were student vocational choice. In the second analysis, student career roles were used as the dependent variables.

RESULTS AND DISCUSSION

1. "The first dimension found in vocational choice, accounting for 61% of the variability, is clearly a personality one. The major contributors to this dimension are Masculine Role and Scholarly Orientation, positively weighted, and Tolerance and Autonomy, negatively weighted."
2. "The second dimension extracted in vocational choice, accounting for 23% of the variability, must be considered one of ability, since it is dominated by the ACT predictor, negatively weighted."
3. "The first dimension found in career role choice, accounting for 49% of the variability, is a combined ability-personality one. The ACT and scholarly orientation predictors, positively weighted, contribute equally to this dimension."
4. "The second dimension revealed in career role choice, accounting for 23% of the variability, is also a combined ability-personality one. This dimension consists primarily of the ACT predictor, negatively weighted, and the Masculine Role predictor, positively weighted."
5. The data suggested that students undecided about vocational choice tend to have less ability, and enjoy more independence of thought than the students who chose engineering or technology. The undecided students tend to be more interested in science and problem solving than those who chose arts-humanities.

COMMENTS

The results of this study are consistent with many other studies that have shamed personality and ability as predictors of vocational choice, and even job satisfaction. These results provide help for the college or vocational counselor in aiding students to make wise decisions concerning the preparations for their future.

42.

Personality Characteristics of Students Who Transfer Out of Engineering

Elton, C. F. and Rose, H. A. (1967) Study #2

Do engineering graduates differ from engineering drop-outs in terms of selected personality variables?

POPULATION AND SAMPLE

The population consisted of all the male freshmen entering the College of Engineering at the University of Kentucky during the 1963-64 and 1964-65 school years. Samples were drawn (no information given on how samples were drawn) from those who remained in engineering and those who transferred, within the university, to other academic areas, including the College of Commerce and the College of Arts and Sciences.

INSTRUMENTATION AND DATA

The instruments used were the Omnibus Personality Inventory (OPI) and the American College Test (ACT).

DESIGN AND ANALYSIS

Factor analysis of the OPI produced five factors: tolerance and autonomy, suppression-regression, masculine role, scholarly orientation, and social introversion. These five factors, plus ACT composite scores, constituted the independent variables in a stepwise, multiple-discriminant analysis. Chi-square was used to evaluate the discrimination power of the variables.

RESULTS AND DISCUSSION

1. ACT discriminated between engineers who transferred into business and those who transferred into liberal arts.
2. Personality differences are related to the choice of college after leaving engineering.
3. Those who transferred into the liberal arts prefer reflective abstract thought, appreciate freedom of thought, and are interested in scientific and artistic problems.
4. Those who transferred into business are more practically oriented than engineers.
5. Tolerance and autonomy was the most important contributor to differentiation. Engineers scored lowest, while transferees to liberal arts scored highest, implying that "the more mature student rebels against the rigidly structured curriculum of engineering."

COMMENTS

The data suggest that the OPI has merit for use in counseling potential engineering students. To the extent that the factors from the OPI are stable, the use of factor scores appears useful in counseling students with certain characteristics (such as a high score on the tolerance and autonomy factor) relative to either entering a course of study in engineering or not. To what extent these results can be generalized is not clear because of the lack of information about sampling procedures and the difficulty in judging how University of Kentucky students are similar to other students.

43.

The Personality of High Earning MBA's in Big Business

Harrell, T. W. (1969)

What are the personality characteristics of M.B.A.s that lead to success in business?

POPULATION AND SAMPLE

The sample included 299 graduates from the Stanford University Graduate School of Business. They all graduated in 1961, 1962, or 1963 and responded to a follow-up questionnaire mailed to them five years after graduation. Those who were not United States citizens, were not working for a profit making organization, or had served in the Peace Corps or the military during the five years after graduation did not receive the questionnaire. The over-all return rate on the questionnaire was 90%. Sixty-four of the graduates were members of the class of 1961, 104 were members of the 1962 class, and 131 graduated in 1963.

INSTRUMENTATION AND DATA

An 11 instrument test battery was given to the graduates in an effort to identify management potential. The instruments included: the Strong Vocational Interest Blank (SVIB), the Minnesota Multiphasic Personality Inventory (MMPI), Guilford-Zimmerman Temperament Survey, Leadership Opinion Questionnaire, the Ghiselli Self-Description Inventory, three measures developed at Harvard (personnel problems, practical judgment, and imaginary events), the Public Opinion Questionnaire, McClelland's six picture Test of Imagination, and the Individual Background Survey.

In addition to these measures, undergraduate grade point average (GPA), second year graduate school of business GPA, peer ratings, and other items were included in the body of data.

A follow-up questionnaire gathered the following types of information: present compensation, starting compensation, job satisfaction, work week, position participation, position concern, ideal job success, present job success, and peer's view of job success. (The report of the study provided no explanation or description of these measures.)

DESIGN AND ANALYSIS

"Present compensation for each class separately was put in standard scores, with a mean of 50 and a standard deviation of 10."

Only the results for graduates working for companies with 1,000 or more employees were included in the report of the study.

Present compensation was used to divide the graduates into high, middle, low thirds. Significance of the differences between means for the high and low groups were computed for each variable measured.

RESULTS AND DISCUSSION

1. The high one-third group scored significantly higher than the low one-third on the following measures: starting salary, job satisfaction, hours worked per week, job success, ideal job success, and peer's view of job success.
2. Only 13 of the possible 55 comparisons involving possible predictors of success were significant at the .05 level or better. In order of significance, they were: second year GPA, SVIB Personnel scale, ascendance scale of the Guilford-Zimmerman, decision making on the Self-Description Inventory, Ma on the MMPI, Individual Background Survey, SVIB Management Orientation scale, initiative on the Self-Description Inventory, social interest (Guilford-Zimmerman), age, general activity (Guilford-Zimmerman), self assurance on the Self-Description Inventory, and boss peer rating by classmates.

COMMENTS

The results suggest that some of the measures listed can be used with a fair degree of confidence to predict salary progress for M.B.A. graduates. The best instruments for prediction appeared to be the Guilford-Zimmerman Temperament Survey, the Self-Description Inventory and the SVIB Personnel and Management Orientation scales.

44.

Vocational Preference Inventory High Point Codes and Educational Preference

Osipow, S. H. and Ashby, J. D. (1968)

How well does a person's educational preference represent his judgment about the degree to which a variety of work environments match his personality style?

POPULATION AND SAMPLE

The sample included 831 male and 129 female college freshmen. (No additional information on the sample or the sampling techniques was provided in the report of the study.)

INSTRUMENTATION AND DATA

Two instruments were used: the Vocational Preference Inventory (VPI), and Holland's Classification of Work Environments. Holland's six occupational environments were: realistic (practical, masculine), intellectual (abstract material), social (interpersonal relations), conventional (systematic work tasks), enterprising (manipulation of people and events for personal gain), and artistic (aesthetic gratification).

DESIGN AND ANALYSIS

Students were given the VPI during orientation period before beginning college work. At the same time, they were asked to indicate their educational preference. Educational preferences were then classified using Holland's six occupational environments.

The two personality areas of the VPI in which the student scored highest were compared with the work environment consistent with his educational preferences.

RESULTS AND DISCUSSION

With one exception (realistic), the highest Vocational Preference Inventory score fell in the same category as the expressed educational preference.

COMMENTS

The approach of this study to the question raised was rather shallow. Considering the sample and the results as indicated, a reader may conclude that this was a group of people who knew enough about themselves, and certain fields of preparation, to be consistent in their choices, but no further application appears possible.

45.

Personality Types and Vocational Choice: A Test of Holland's Theory

Osipow, S. H., Ashby, J. D. and Wall, H. W. (1966)

What is the relationship between personality type and vocational choice?

POPULATION AND SAMPLE

The sample consisted of three groups of college freshmen at Pennsylvania State University. The three groups included: Decided (D)—81 male and 27 female students with strong commitment to a field of study; Tentative (T)—79 male and 12 female students with a moderate commitment to some educational-vocational goal (not directly enrolled in a program); and Undecided (U)—26 male and 3 female students who had some idea, but no real commitment to any educational-vocational goal. The T and U groups were all enrolled in the Division of Counseling, with psychologists as advisors.

The sample was selected from the entering freshmen during fall and summer terms of 1964. All groups included only students who completed one full term of academic work.

INSTRUMENTATION AND DATA

During a testing program in connection with orientation of new students, all members of group D rated themselves on personality, using the six personality types proposed by Holland (realistic, intellectual, artistic, enterprising, conventional, and social). The students put the list of six personality descriptions in rank orders, according to the degree they felt the description applied to them. Using a 5-point scale, they also rated the six descriptions, according to how well they felt the description applied to them. Thus, both a vertical and horizontal rating and ranking of each description were provided.

The T and U groups followed the same procedures just prior to their first term.

Each student completed a personal information blank which asked him to list several career preferences. The first career was classified according to Holland's six types.

DESIGN AND ANALYSIS

It was predicted that students would choose occupations included in categories consistent with their categories of personality. The categories of first personality ranking were compared with categories of first career choice. Coefficients of correlation were computed.

Chi-square analysis was used to statistically compare the relationship between the categories of first career choice and first personality ranking.

Analysis of variance was used to compare the personality ratings and the category of first occupational choice for group D.

RESULTS AND DISCUSSION

1. Most of the students chose occupations in the realistic and intellectual categories, regardless of personality type (chi-square significant at .01 level).

2. Correlations between students' ratings of personality description and categories of the occupations they would choose were significant for seven out of 15 correlations.

3. Significant F ratios were found in the way group D students (in choice categories realistic, social, enterprising, and artistic) rated the personality descriptions. (No discernable pattern appeared.)

4. "The relationship between the personality ratings and choice categories of the T group indicates no interaction between choice category and personality rating."

5. "In general, the results support the prediction that students choose occupations consistent with their personality type, although not uniformly so."

COMMENTS

There are several points in the design and results of the study which cause some doubt about its conclusions. The arbitrary assigning of chosen careers into six categories provides an opportunity for experimenter bias. In addition, there appears to be a lack of statistical support required to accept the stated hypothesis. Result number one clearly points out that no relationship was found between the first occupational choice category and first personality type.

46.

Job Attitudes in Management: Perceptions of the Importance of Certain Personality Traits as a Function of Job Level

Porter, L. W. and Henry, M. M. (1964)

Does the perception of personality qualities needed for managerial job success change from lower to higher levels of management?

POPULATION AND SAMPLE

A questionnaire was sent to 6,000 managers in all types of companies throughout the United States. Responses were received from 1,958 individuals (33%), of which 1,896 had been correctly filled out and were used in this study. Approximately two-thirds of the sample were managers currently connected with a manufacturing company, while the other one-third were employed by non-manufacturing companies. The respondents were classified according to a hierarchy of management categories: president, vice-president, upper-middle (division, plant, and major department managers), lower-middle (minor department and sub-department managers), and lower (first or second level supervisors). (The method used in assigning managers to the five categories was not explained in the report of the study.)

INSTRUMENTATION AND DATA

The instrument consisted of a questionnaire which asked the manager to rank 12 traits according to their importance in achieving success in his present position. Two traits—intelligent and efficient—were hidden in the list to disguise the dimension (personality) being measured. In analyzing the results, these two traits were removed, leaving only 10 items. The 10 relevant traits were used in two theoreticals clusters for analysis of the rankings. The cluster were: inner-directed (forceful, imaginative, independent, self-confident, and decisive) and other-directed (cooperative, adaptable, cautious, agreeable, and tactful).

DESIGN AND ANALYSIS

Analysis of the personal data for each manager made it possible to classify them according to several variables. The three most important and relevant variables for this study were: level of position, age of the respondent, and the amount of formal education for each manager. Cross validation of the individuals by age was done to hold the effects of age constant across all levels. Amount of education was compared across all management levels and found to be almost equal in all cases. Therefore, the various results obtained for management levels cannot be attributed to either age or amount of education.

RESULTS AND DISCUSSION

1. Cluster scores indicated that the inner-directed cluster was regarded as more important for the higher level of management.
2. Cluster scores indicated that other-directed cluster was regarded as less important for the high group.
3. Almost all of the 10 traits followed the trends of the cluster.
4. The results show that the psychological demands placed upon a manager by his position change from level to level.

COMMENTS

The theoretical clusters, named inner-directed and other-directed, are a crucial aspect of this study. If these clusters do not, in fact, represent what they are said to represent, then interpretation of these results will be very difficult.

The interpretation that the results show that the psychological demands placed upon a manager by his position change from level to level may be in error. The alternate interpretation that managers with particular personality characteristics (inner-directed) rise more rapidly through the ranks seems to be equally plausible.

47.

Personality Characteristics of Diverse Occupational Groups

Thumin, F. J. (1965)

Does the Minnesota Multiphasic Personality Inventory distinguish between two seemingly diverse occupational groups?

POPULATION AND SAMPLE

The sample included 44 advertising men and 44 engineers who had been referred to the Washington University Counseling Center for employment testing purposes. Approximately 80% of each group had graduated from college.

INSTRUMENTATION AND DATA

The instrument used was the Minnesota Multiphasic Personality Inventory (MMPI).

DESIGN AND ANALYSIS

Average MMPI profiles were constructed for the advertising and engineering groups. A visual analysis was made to determine whether or not differences in trend or shape of the profiles existed. The mean scores were compared statistically to determine whether significant differences appeared on any of the 13 scales of the MMPI.

RESULTS AND DISCUSSION

1. Visual analysis of the mean profiles for the two groups showed great similarity in over-all shapes, with the exception of one scale (mf). (A description of the mf scale was not provided in the report of the study.)

2. Statistical comparison of the two group means showed significant differences on seven of the scales.

3. Engineers scored lower on 10 of the 11 scales of the MMPI. (The exception was the Si scale which was not described in the report of the study.)

COMMENTS

The size and nature of the sample were the main limiting factors in this study. Although the results cannot be used to infer to groups in general, they suggest the possibility that information such as that derived from the MMPI will be useful in guiding career decisions.

48.

Personality Variables and Career Decisions—A Pilot Study of Law and Social Work Students

Walther, R. H. (1966)

Can an instrument which identifies behavior styles and relevant occupational variables be an effective tool to improve decisions relating to career choice?

POPULATION AND SAMPLE

Two major groups were involved in the study—law and social work students.

The social work group was comprised of either first or second year students at five schools of social work: Tulane University, University of Portland, University of Denver, University of Maryland, and Howard University. Usable responses were received from 495 students, or slightly more than 85% of those asked to participate.

The law student group was composed of either first year or graduate law students. There were 244 (129 undergraduates and 115 graduates) who responded to two instruments. This was a response rate of 50% to 60% of those asked to participate.

The law student group consisted of 227 males and 17 females having an average age of 29.6 years. The social work group contained 168 males and 280 females with an average age of 29.7 years. (Age and sex information was available on only 448 of the 495 social work students.)

INSTRUMENTATION AND DATA

The Job Analysis and Interest Measurement (JAIM), a self-descriptive inventory, was given to all students. This is an experimental instrument developed from studies of mature workers. The instrument has 34 scales which measure presence and degree of such characteristics as, independence, directive leadership, identified with authority, prefer routine, supervisory activities, move against aggressor, slow change, etc. (No examples of the items were given in the report of the study.)

A second instrument was given only to law students to measure values, orientations, and preferences about the law profession. It was a 20-page questionnaire investigating what age they decided to pursue a law career, who influenced them to do so, any relatives already in the profession, aspects of the profession most and least interesting to them, etc. Accompanying these questions were items of biographical nature, such as father's occupation, geographical area of childhood, size of home community, previous work experience, undergraduate major, kinds of undergraduate degrees, etc.

DESIGN AND ANALYSIS

The JAIM was administered to all students, in both groups, at the beginning of the 1964-1965 academic year. It was given a second time to 182 students at two schools of social work at the end of the academic year. The law students were asked also to complete the law questionnaire.

A point biserial correlation technique was used to make comparisons among various groups, subgroups, and criteria. The *t* test was applied to test for significant differences.

Comparisons made of JAIM results were the following: (1) social work students, (2) a 1964 class to a 1965 class of social work students, (3) interest in law specialty, (4) social work students' school grades, field work ratings, and scores on ability tests to yields on JAIM, (5) amount social work students changed over an academic year, and (6) graduate to undergraduate law students.

No analyses were made on the results of the law student responses to the law questionnaire.

RESULTS AND DISCUSSION

1. The social work students' and law students' responses on the JAIM were significantly different from each other on all but two of the scales (move away from aggressor and slow change).

2. In a comparison of the 1964 class to the 1965 class of social work students, only two of the 34 scales were significant at the .05 level.

"The slight differences which were found might be accounted for by minor differences in selection standards, or in the characteristics of the students who applied for admission during the two years."

3. In the comparison of subspecialties within the law profession: (a) significant differences on seven scales were found between 25 students who had indicated a strong interest in juvenile court, and 76 not interested; (b) there were six scales which were significantly different between 78 students who were interested in corporation law, and 35 students who would reject this specialty; (c) there were significant differences on eight of the scales between 35 students expressing an interest in being a defense attorney, and 47 not interested; and (d) there were only three scales which were significantly different between 25 students interested in becoming a prosecuting attorney, and 76 students not interested.

4. In a comparison of the social work students' JAIM results with performance criteria, it was found that: (a) 12 scales correlated significantly with student grades; (b) seven scales correlated significantly with field work ratings; and (c) 17 scales correlated significantly with the verbal section of the Graduate Record Examination, and nine scales with the quantitative section.

"School grades mean the grade received by the social work student at the end of the academic year during which he completed the JAIM. The field work rating was the rating given him by his supervisor during his field service at hospitals, clinics, welfare agencies, etc., as part of his social work educational program. Both of these criteria can be expected to be unreliable, with the field work ratings being the least reliable. Factors which can be expected to contribute to unreliability were that the subjects attended schools with different standards and were judged by many raters."

5. In the comparison of the JAIM administrations to social service work students, before and after an academic year, there were 11 scales which had changed significantly during that time.

"An important issue in the socialization of the professional is the type and degree of change which occurs as a result of educational and training experiences."

In this study, the intensity of the professional socialization experience was producing change, and these changes were reflected by the JAIM. All other things being equal, repeated JAIM measurements should be stable.

6. "A surprising finding was that there was no substantial difference in the JAIM scores of graduate and undergraduate law students. The only scale showing a significant difference was 'Activity-Frequent Change' and, as might be expected, the younger undergraduate students scored higher."

7. Only slight differences were found between the responses of graduate and undergraduate law students on the law questionnaire, which lends support to an assumption that the two populations may be very similar in their personality characteristics and values.

"Both the graduate and undergraduate students indicated that the aspect of legal practice which they themselves valued most highly was the intellectual challenge, but that other students and practicing lawyers valued income potential most highly. Most of them thought that the insights and techniques of the behavioral sciences were of great practical value to the practicing lawyer and that the use of nonlegal experts by the courts should be expanded. They were most interested in specializing in personal injury and corporation law, and least interested in divorce and child custody law."

COMMENTS

The JAIM appears to have potential in differentiating among groups of students who prefer different professions, or areas within a profession. However, the amount of change which the sample of social work students showed after one year suggests the need for further testing of the stability of the JAIM scores. Similarly, the large differences between students in different areas of law suggests that a further examination of the differences within a profession vs. the differences across professions is needed.

VOCATIONAL INTERESTS

49.

Interests of Engineering Graduates According to Undergraduate Curricula

Apostal, R. A. (1968)

Are there significant differences in measured interests of engineering students according to undergraduate curriculum specialty?

POPULATION AND SAMPLE

The sample included 450 graduating engineers from the University of Maine during the years 1964-1966. Additional graduates from 1961-1963 were selected to make up a total of 90 individuals in each of 5 engineering specialties (mechanical, electrical, chemical, civil, and engineering physics). (A complete description of sampling techniques was not provided in the report of the study.)

INSTRUMENTATION AND DATA

The instrument used was the Strong Vocational Interest Blank (SVIB). It was administered at the time of application to the School of Technology.

DESIGN AND ANALYSIS

Analysis of variance was applied to each scale of the SVIB. When the F Test was significant, Duncan's Multiple Range Test was used to determine exactly which groups differed.

RESULTS AND DISCUSSION

Analysis of variance revealed significant differences between the groups of engineering students on 28 of 45 SVIB occupational scales and on two of four non-occupational scales.

COMMENTS

When measuring attitudes, interests, and behavioral characteristics, time can account for great differences. The length of time involved in selecting the sample in this study may make the reliability of the results questionable. Although, if the time element was the same across groups, then it probably does not matter too much.

The question asked in this study has potentially important implications for counselors and potential engineering students. Knowledge of the characteristics of students already in the various engineering curricula may help a student decide (or a counselor to advise) to enter a particular curriculum because of similarities of his interests with students already in the curriculum.

50.

An Analysis of Vocational Interests at Two Levels of Management

Bedrosian, H. (1964)

What are the vocational interest characteristics of middle and top level managers?

POPULATION AND SAMPLE

"The subjects (Ss) were drawn from the management personnel of a large multiplant corporation engaged in the design, development, and manufacture of heavy industrial machinery." (No further description of the sample or sampling procedures was included in the report of the study.)

INSTRUMENTATION AND DATA

"Collection of data was carried out as part of a personnel research program..." The instrument used for this study was the Strong Vocational Interest Blank (SVIB) for Men.

DESIGN AND ANALYSIS

Each of the individuals was classified by work level (top or middle management level), field of work (business contact, administration and control, technology), and work role (line or staff). Line was defined as director of a work unit. Staff was defined as a specialist with responsibilities in a narrow field of specialized tasks, such as research.

Scatter scores were computed from SVIB scores which represented the degree of differentiation between interest and disinterest in the SVIB profile of interests.

The measure of socioeconomic level of interest was the Occupational Level (OL) scale of the SVIB.

"Decisiveness of expressions of vocational interest was measured by the relative absence of 'indifferent' responses . . . Fewer indifferent responses were taken to indicate more decisive expressions of interest."

Two hypotheses were studied. Hypothesis 1—The two management level groups will differ significantly, with (a) less clearly patterned vocational interests for men of the top management level, (b) socioeconomic level of vocational interest higher for top level managers, and (c) top level managers more decisive in their expression of vocational interest. Hypothesis 2—The vocational interests of line managers will be less clearly patterned than interests of staff managers.

Means and standard deviations were computed for various subgroups on each of the measures. Significance of the differences between means was determined using a *t* test.

RESULTS AND DISCUSSION

1. Of the three fields of work, only in the business contact group were the interest profiles of the top management group less clearly defined than the middle management group. This was explained in part by the lack of training programs to qualify people specifically for this field of work, as opposed to administration and controlling, and technology.
2. The occupational level scores for the individuals in top management positions were significantly higher than scores for those in middle management positions for all three fields of work.
3. No significant differences were found between the two management levels for frequency of indifferent responses.
4. Individuals in staff positions did not appear to have more clearly defined interest patterns than those in line positions.

COMMENTS

The description of the sample and the sampling techniques was not adequate enough to permit judgments on the generalization of the results.

51.

Psychological Needs Related to Vocational Personality Types

Bohn, M. J., Jr. (1966) Study #1

What is the nature of the relationship between psychological needs and vocational interests?

POPULATION AND SAMPLE

"The subjects were males for whom Strong Vocational Interest Blanks (SVIB) and Adjective Check List (ACL) profiles were available in the fields of the University Counseling service at the University of Iowa. The majority of subjects were clients whose stated concern was educational or vocational in nature." (No further description of the sample or sampling techniques was provided in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were the Adjective Check List (ACL) and the Strong Vocational Interest Blank (SVIB). The ACL was the measure of personality needs. From a list of 300 adjectives, each student was asked to select those which he believed best described himself.

The SVIB was the measure of vocational personality. One scale of the SVIB was selected to represent each of the six general personality types suggested by Holland. They were: realistic (printer), intellectual (chemist), social (social science high school teacher), conventional (accountant), enterprising (sales manager), and artistic (artist).

DESIGN AND ANALYSIS

Seventy-five students were selected for each of the six occupational scales listed. Twenty-five scored 45 and above (A's), 25 scored between 30 and 39 (B's).

"The ACL need scores for each SVIB occupational scale were analyzed according to a parallel simple-randomized design. Thus, the scores for each need were analyzed separately producing 16 F tests for each SVIB occupational scale. A significant F ratio indicated differences between the need scores of the A, B, and C groups of the particular scale."

RESULTS AND DISCUSSION

With the exception of one personality type (social), each type showed a significant positive or negative relationship with at least five of the 16 ACL needs.

2. Dominance appeared to be the most significant need. It showed significant negative relationship with three of the personality types (realistic, intellectual, artistic) and positive relationship to two personality types (conventional and enterprising).
3. Heterosexuality was negatively related to realistic, intellectual, and artistic personality types and positively related to enterprising.

COMMENTS

Many points in this study create doubt about the value of the results; for example, the description of the sample does not properly identify the students. Why did they come to the counseling center? Are they peculiar by reason that they did come? Another example would be the apparent arbitrary selection of the occupations used to represent a personality type. It may be argued that any one occupation would not have enough characteristics that would be representative of other occupations to use it as a criterion measure in assessing personality.

52.

Vocational Maturity and Personality

Bohn, M. J., Jr. (1966) Study #2

Is there any relationship between vocational maturity and other personality dimensions that reflect maturity?

POPULATION AND SAMPLE

The sample included 75 male students from Washington University. Selection of the students was based on the availability of Strong Vocational Interest Blank (SVIB) and Adjective Check List (ACL) profiles from the university counseling service. The students were divided into three groups (high, middle, and low maturity) according to scores on the Interest Maturity Scale of the SVIB.

INSTRUMENTATION AND DATA

The instruments used were the Interest Maturity Scale (IM) of the Strong Vocational Interest Blank, and the Adjective Check List (ACL) which is a measuse of personality needs.

DESIGN AND ANALYSIS

ACL scores were anlayzed for each of the three maturity level groups.

Significant F ratios were interpreted as reflecting significant differences between need scores.

Mean chronological ages for the three groups were compared to determine if age differences between the groups were significant enough to influence maturity levels.

RESULTS AND DISCUSSION

1. Comparisons of mean chronological age for each of the three groups showed no significant differences.

2. Need scores were significantly related to maturity in (achievement, exhibition, autonomy, affiliation, succorance, dominance, change, heterosexuality, defensiveness) out of 16 needs; i.e., high IM was associated with higher needs.

3. Personality structure of individuals with high IM scores, compared to those with low IM scores, suggests that mature individuals on one scale are also mature on another measure.

COMMENTS

The results suggest that high IM scores on the SVIB are related to a certain cluster of personality characteristics or needs. What does this mean with respect to counseling students in matters of career choice?

53.

The Non-Occupational Scales of the Strong Vocational Interest Blank and Achievement in College

Desena, P. A. (1964)

Do over-achieving, under-achieving, and normal-achieving college engineering students reveal significantly different mean scores on the Interest-Maturity, Occupational Level, Specialization Level, or Masculinity-Femininity Scales of the Strong Vocational Interest Blank?

POPULATION AND SAMPLE

The sample was selected from 1,061 freshmen male engineering students at Pennsylvania State University. Three groups of 40 students each were chosen to represent over-achieving, under-achieving, and normal-achieving groups. The groups were matched on the basis of age, race, term in college, identical courses taken, residence for their first three terms, predicted grade point average (GPA), minimum deviation from predicted GPA, and consistent achievement.

INSTRUMENTATION AND DATA

The instrument used was the Strong Vocational Interest Blank (SVIB). Only the four non-occupational scales of the SVIB were used: Interest-Maturity Scale (differentiates the interests of 15 and 25-year-old males), the Masculinity-Femininity Scale (compares the student on scales that differentiate responses by males and females), the Specialization Level Scale (measures the willingness to change or narrow one's interests), and the Occupational Level Scale (denotes similarity of interests to those of businessmen and professional men).

DESIGN AND ANALYSIS

The *t* test of significance of the difference between the means of the three groups on each of the SVIB non-occupational scales was used.

RESULTS AND DISCUSSION

1. Significant differences among the groups were found. On the Interest-Maturity Scale comparing under- and normal-achievers (.05) the under-achievers showed less maturity; on the Specialization Level Scale comparing the under- and normal-achievers and the over- and under-achievers (.01) the under-achievers showed less specialization.

2. No significant differences were found on the Masculinity-Femininity Scale or the Occupational Level Scale.

The findings when interpolated by means of the SVIB manual suggested the following: (a) normal-achievers and over-achievers tended to be more mature in their interests and less likely to change them in the future than the under-achievers, (b) over-achievers and normal-achievers tended to be more willing to narrow their interests to one field.

COMMENTS

The results seem to indicate, as many other studies have done, that there is a relationship between what the Interest Maturity Scale of the SVIB measures and various measures of academic achievement.

Studies are needed to identify the casual agents in this relationship and hopefully to determine how to control them.

54.

Parental Identification and the Patterning of Vocational Interests in College Males and Females

Heilbrun, A. B., Jr. (1969)

What is the relationship between parental identification and the patterning of vocational interests in college students?

POPULATION AND SAMPLE

Included in the sample were 47 male and 33 female undergraduate students at Emory University during the 1967-68 academic year. All students were vocational counseling clients at the psychological center of the university. (The report of the study provided no further description of the sampling techniques used.)

INSTRUMENTATION AND DATA

Parental identification was assessed using the Adjective Check List as the measure of the student's self-perception, as well as two separate questionnaires for the student's rating of each parent. Scores were derived to represent the similarity between self-perceptions and perceptions of parents, then normalized with a mean of 50 and SD of 10. A parental identification score above 50 indicated same-sex identification, while a score below 50 indicated cross-sex identification. Similarity was measured across 15 traits: need achievement, nurturance, dominance, aggression, and others.

Masculinity-femininity of the parental model was measured using student judgments of which parent the 15 traits best described. Nine of the 15 traits had been previously sex-typed for parents, based on ratings by 400 college students. The number of these nine traits which the student attributed to the parental model, and which was consistent with the sex-typing, was the masculinity-femininity score.

The Strong Vocational Interest Blank (SVIB) was used to develop four interest pattern scores: (a) primary pattern including those with scores of B+ or better, (b) reject pattern (scores of C or less), (c) total pattern score (sum of A, B+, and C for all occupations), and (d) percentage of primary score (A+B+ over A+B++C).

DESIGN AND ANALYSIS

Mean occupational interest pattern score for male and female students, for different parental identification types, were compared using factorial, unweighted means analysis of variance for unequal Ns.

RESULTS AND DISCUSSION

1. College males who identified with their fathers tended to have more primary occupational interests than males who identified with the mothers (.05 level).

2. Female students who identified with either a feminine father or masculine mother tended to have a larger number of primary occupational interests than females who identified with appropriate sex-role models; e.g., masculine faher or feminine mother (.05).

3. Feminine father or mother sex-role model was significantly related to occupational rejections for females (.05).

4. Male students who identified with masculine parent models had significantly more occupational rejections than males who identified with feminine models.

COMMENTS

It seems that identification with a masculine figure by male students was associated with more definite occupational interest. This would be expected, since the masculine role is that of provider. Further, finding 4 suggests that males' identification with a masculine figure leads to greater polarity of interests (more occupational acceptances and rejections). The situation with females is not as clear cut and may be more complex by virtue of an interaction between appropriate sex-role models and appropriate occupational-role models. This possible interaction appears to be of considerable importance and warrants further study.

55.

Prediction of Medical School Attendance from College Freshman Strong Vocational Interests Blanks

Hood, A. B. (1965)

Do freshmen who score high on the Physician scale of the Strong Vocational Interest Blank (SVIB), and who apply to medical school, differ significantly on other scales of the SVIB from freshmen who score high on the Physician scale, but not apply to medical school?

POPULATION AND SAMPLE

The sample was taken from all entering freshmen in the College of Science, Literature, and Arts at the University of Minnesota during the years 1953, 1954, and 1955. All entering freshmen were given the Strong Vocational Interest Blank (SVIB) as part of the regular orientation test program. Those students who achieved an A score (standard score of 45 or above) on the physician scale were selected for this study. Of the 3,500 students, 366 met this criterion.

Of the 366 students who obtained an A score, 54 had taken the Medical College Admission Test (MCAT). Fifty of the 54 were selected at random and included in the study. A random sample of 50 students who obtained an A score on the Physician scale, but did not take the MCAT, was also selected for the study. These constituted the two groups for the study.

INSTRUMENTATION AND DATA

The instruments used were the SVIB and the MCAT. The SVIB was used as a measure of vocational interest. The MCAT was used to identify the students applying for medical school, since it is required when application is made. Twice a year, a list of the names and test scores of the students who have recently taken the test is sent to all medical schools. These lists, for the years 1955-1960, were searched for names of the University of Minnesota students who had also scored an A on the Physician scale of the SVIB.

DESIGN AND ANALYSIS

Mean group scores were determined for the two groups on the remaining 47 scales of the SVIB. Biserial correlation coffiecients were computed between the group membership and scores of the SVIB scales.

RESULTS AND DISCUSSION

1. Students who did not apply to medical school obtained significantly higher (.05) scores on seven of the occupational scales than those who did apply: artist, architect, mathematician, physicist, math-physical science teacher, minister, and advertising man.
2. The group that did not apply had significantly more A's on other scales (6.1), than did those who applied (4.7).
3. The scales showing the greatest difference between the two groups were artist and architect. Students with low scores on these scales applied to medical school, while those with high scores did not ($r_b = -.64$ and $-.57$ for artist and architect, respectively). This was a surprising result since Physician scores have a very high correlation with artist ($r = .69$) and architect ($r = .78$) scores in large samples who have taken the SVIB.

COMMENTS

From these data, it appears that students who score high on the Physician scale of the SVIB and apply to medical school have fewer major interests and, in particular, are less interested in art and architecture, than students who score high on the Physician scale and do not apply to medical school. The chosen professions of these students were not listed. The theoretical and/or practical implications of these data are not clear.

56.

Relationship Between Educational and Vocational Interests

Miller, C. D. and Thomas, D. L. (1968)

What is the relationship between educational and vocational interests?

POPULATION AND SAMPLE

The sample consisted of 100 male students who had sought counseling at the Colorado State University Counseling Center.

INSTRUMENTATION AND DATA

The instruments used were the Strong Vocational Interest Blank (SVIB) and the Educational Interest Inventory (EII), published by Educational Interest Testing Associates. (Information concerning validity and reliability of the EII was not provided in the report of the study.)

DESIGN AND ANALYSIS

Students were each given the SVIB and EII, and the scores were correlated.

RESULTS AND DISCUSSION

1. Educational interests were significantly related to several vocational interests, some of which did not directly correspond to the academic area being examined.
2. Highest correlations were between educational and vocational interests in physical science, engineering, and industrial arts. Lowest correlations were found in the fine arts and social sciences.

COMMENTS

Although the sampling techniques make generalizing the results to other students difficult there was one very important point made—vocational interests are not always related to educational interests or achievements. The important question is, "Are students whose vocational and educational interests match more successful than those whose vocational and educational interests do not match?"

57.

The Meaning of Unpatterned Vocational Interest

Munday, L. A., Braskamp, L. A. and Brandt, J. E. (1968)

Is there any relationship between unpatterned vocational interest, and such things as adjustment, maturity, and intelligence?

POPULATION AND SAMPLE

The sample consisted of 314 male students who used the University Counseling Service at the University of Iowa between 1959 and 1966.

The students were categorized by the Strong Vocational Interest Blank (SVIB) into one of three groups: (a) one or more primary interests, (b) no primary, but one or more secondary interests, and (c) no primary or secondary interest pattern.

(No further description of the population and sample was provided in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were: the SVIB, 10 clinical scales (not identified in the report of the study) of the Minnesota Multiphasic Personality Inventory (MMPI), Ego Strength Scale, and a college-level scholastic aptitude test (not identified in the report of the study).

DESIGN AND ANALYSIS

The relationship of vocational interest and intelligence and vocational interest and maturity was analyzed using 2-factor complex analysis of variance. Ego strength, maturity, and intelligence were related to interest patterns using simple analysis of variance.

RESULTS AND DISCUSSION

No significant relationships were found between interest pattern and any of the variables studied.

COMMENTS

The samples in this study were drawn from the same institution over a long period of time. Better sampling techniques would allow more confidence to be placed in the results.

While it seems surprising that people who differ in patterns of vocational interest (one or more primary, etc.) do not differ in terms of other personal characteristics (such as personality (MMPI), ego strength), that is what this study found. In view of the relationship of SVIB scores with vocational success, and the relationship of other personal characteristics with academic success, such a finding is puzzling.

58.

Differences in Interest Patterns Between Graduates of Diploma and Basic Collegiate Programs in Nursing

O'Neil, P. M. and Madaus, G. F. (1966)

Are there significant relationships between scores on the 30 scales of the Strong Vocational Interest Blank for Women and membership in either the three-year diploma or four-year basic collegiate nursing groups?

POPULATION AND SAMPLE

"The sample consisted of 60 registered nurses, practicing in a variety of settings in the Boston area, who took the SVIB between March 1 and 15, 1965. Thirty of the nurses were graduates of three-year diploma programs and 30 were graduates of four-year basic collegiate programs." (No description of sampling techniques was included in the report of the study.) The mean number of years working experience for the collegiate nurses was 3.7, compared to 10.5 for the diploma group.

INSTRUMENTATION AND DATA

The instrument used was the Strong Vocational Interest Blank (SVIB) for Women. The SVIB contained 30 scales, each representing an occupation for women.

DESIGN AND ANALYSIS

Two hypotheses were tested:

Hypothesis 1—"There would be no relationship between group membership and scores on the SVIB scales taken univariately."

Hypothesis 2—"There would be no relationship between group membership and scores on the SVIB scales taken multivariately."

Point biserial and multiple point biserial coefficients of correlation were computed between group membership and scores on each of the 30 SVIB scales. The *t* test of significance was applied to each coefficient.

RESULTS AND DISCUSSION

1. The diploma nursing group scored significantly higher than the collegiate group on the following scales: buyer, elementary teacher, office worker, dietician, and nurse (all at the .05 level). In addition, they also scored significantly higher on the housewife and home economics teacher scales (.01 level).

2. The collegiate nursing group scored significantly higher on the psychologist scale (.01).

3. Results of the multivariate analysis showed six scales which discriminated between the two groups at the .01 level. The significant scales were: artist, life insurance saleswoman, housewife, occupational therapist, nurse, and dentist.

4. The difference in length of work experience for the two groups (3.7 and 10.5 years) may account for the greater similarity between diploma nurses and the nurse described on the SVIB scale.

COMMENTS

The fact that difference in length of work experience was thought to account for difference between groups on the nurse score opens the door for possible explanation of all differences on the same grounds. The diploma nurses were more experienced (and undoubtedly older). Thus, they would be more likely to have had experience with such sub-tasks of nursing as teaching other nurses (they out-scored the collegiate nurses on two teacher scales) and administrative duties (they out-scored the collegiate nurses on office worker, dietician, buyer, and home economics teacher scales). Thus, the difference in years of service makes other differences difficult to interpret.

59.

Differential Interests Among Medical Students

Thrush, R. S. and King, P. T. (1964-1965)

Do upper-class medical students have interest patterns that can be used as a basis for counseling future medical students?

POPULATION AND SAMPLE

The sample consisted of all of the third-year medical students who were at the University of Missouri at the beginning of the 1963-64 school year (N=81).

INSTRUMENTATION AND DATA

The instrument used was the Strong Vocational Interest Blank For Men (SVIB-M). A SVIB-M profile was obtained for each student.

DESIGN AND ANALYSIS

Standard scores on each of the 45 occupational scales, and the four non-occupational scales, for each student were used to make composite scale scores for each of the scales. This was done by averaging the scale score on a single occupation across all students.

All SVIB-M profiles were examined for primary interest patterns (those groups of interests having 50% or more A and B+ scores). Data were analyzed using means, standard deviations, and the chi-square test of significance.

RESULTS AND DISCUSSION

1. On the physician scale, 57 students scored in the A range, 24 did not.

2. Nine of the top 10 (in the junior class rank) were in the A category, while only four of the bottom 10 were in the A category. Using chi-square, the difference was significant at the .01 level.

Note: Additional information from the Dean of the Medical School showed that, in almost every case, those students who were not in the A category were either interested in specializing, or were not doing well academically.

3. Primary interest pattern distribution for the two groups (those in A category of the physician's scale and those not in A) showed significant differences between the groups, corroborating the Dean's information.

4. Those students who scored in the A range on the physician's scale apparently have similar interests to individuals in the scientific and technical areas. Those who did not score in the A range were more similar to individuals in business, production management, and welfare. "There is evidence to suggest that many of the graduates of medical colleges who score in the non-A range of the physician's scale, gravitate toward positions in which their primary functions are administrative involving relatively few medical duties."

COMMENTS

The results appear to have value for counseling potential medical students. Of similar utility is the counseling potential for medical students who do not fit the profile of the physician on the SVIB-M. The evidence seems to suggest that these people also have a definite place in the administrative and business aspects of the medical profession.

60.

Characteristics of Male University Students with Weak Occupational Similarity on the Strong Vocational Interest Blank

Zytowski, D. G. (1965)

Do students with weak occupational similarity, as measured by the Strong Vocational Interest Blank (SVIB), differ from students with high occupational similarity, in terms of maturity of interests, occupational level of interests, and patterns of responding to categories of the SVIB and Kuder Vocational Preference Record?

POPULATION AND SAMPLE

Two groups of individuals were selected through the Washington University Student Counseling Service. The students were seen at the counseling service within the five years prior to this study. The criterion of selection for each group was: Group A (N=35), no primary or secondary interest patterns; and Group B (N=35), one or more primary interest patterns.

The primary and secondary interest patterns were determined by the profile of the letter grades within the established occupational groups of the SVIB. The occupations within the A and B+ range equaled primary interest, B and B+ range equaled secondary interest, and B and B– range equaled tertiary interest patterns. The individuals in comparison Group B (high occupational similarity) were matched with individuals in Group A (low occupational similarity) by initial of last name and year seen at the counseling service. (A complete description of the sample was not included in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were the Strong Vocational Interest Blank for Men (SVIB) and the Kuder Vocational Preference Record-Form CH.

DESIGN AND ANALYSIS

Four hypotheses were tested:

Hypothesis 1—Persons with low occupational similarity have less mature interests than those of high similarity. (Tested by the interest maturity scale of the SVIB.)

Hypothesis 2—Persons with low occupational similarity have interests on a lower occupational level than those with high similarity. (Tested by the occupational level scale of the SVIB.)

Hypothesis 3—Persons of low occupational similarity have fewer likes, more indifferences, and more dislikes than those with high similarity. (Tested by the first 280 responses of the SVIB which require the individual to respond with likes, indifferences, and dislikes.)

Hypothesis 4—Persons with low occupational similarity show less extreme scores on the Kuder scales. (The Kuder scales require the individual to respond in degree of like and dislike.) The F ratio was used to compare the total variance of the two groups. The accepted level of significance for this study was .05.

RESULTS AND DISCUSSION

1. The only significant difference between the means of the two groups occurred on the interest maturity scale (.001). This supported Hypothesis 1; i.e., groups with low occupational similarity have less mature interests than the comparison group.

2. Hypothesis 2, which deals with occupational level, was not supported, although differences were found in that direction; i.e., low similarity, low level of occupation.

3. The group with low similarity, or weak interest, responded with more dislikes than the high similarity group. No differences were found in indifferent and like responses.

4. Variances for each scale of the Kuder were higher, in most cases, for the high similarity group. The total variances showed no significant difference between groups. Hypothesis 4 was not supported.

COMMENTS

It is questionable what other personality characteristics are related to weak occupational similarity. The data suggest that the maturity of vocational interests, as measured by the interest maturity (IM) scale of the SVIB, is related to the strength of occupational similarity (OS)—low IM is related to weak OS. The existence of these two concepts, IM and OS, as separate entities needs investigation. That is, to what extent is the finding of this study an artifact of the SVIB?

ATTITUDES

61.

Attitudes of College Students Toward Business Careers

College Placement Council, Inc., Research Information Center (1968) Report # 1

What are the attitudes of college students toward business careers?

POPULATION AND SAMPLE

The National Opinion Research Center's (NORC) national sample of 1961 college graduates was used in this survey. The sample consisted of 19,693 male graduates who received a bachelor's degree in 1961. The sample was selected from 56,664 graduating seniors who responded to all four mail contacts (1961, 1962, 1963, 1964). Students who did not actually get a degree or who were working toward a degree requiring more than four years of college were excluded. The students' undergraduate majors were business (19.9%), engineering (16.8%), arts and sciences (39.0%), and other areas such as law, medicine, and education (24.3%).

INSTRUMENTATION AND DATA

The data were collected by, and obtained from, the original NORC study. Detailed information included: academic background, plans for graduate study, career aspirations, socioeconomic background, occupational values, and attitudes toward specific occupations. The students were observed for three years to detect early career developments and settling-in phases, in addition to developments in career plans of those intending to go on to graduate school.

(A description of the instruments used to collect the data was not provided in the report of the study.)

DESIGN AND ANALYSIS

The NORC study investigated responses toward career-field expectations, as opposed to college majors. Thus, the professions included under the main heading of business were restricted and specialized, including only such areas as: advertising, accounting, sales, financing, marketing, and others of a similar nature. The NORC study did not take into account engineers, lawyers, chemists, and physicists, who could be employed in industry. The NORC study considered only majors in business curricula.

The College Placement Council Research Information Center study was focused on students of all career fields who elected to work for a business employer. Career-employer expectations were analyzed by a retabulation of the NORC data. The questions asked in the NORC study concerning expected career employers concentrated on long-term plans; i.e., after military service, after training is completed, and when careers are well established. Responses were tabulated according to size and type of school the students attended.

Career fields were compared with career employers. The proportions of students employed in business who came from various career fields were figured.

Occupational values were considered for their relative importance in terms of success to both expected career employers and career fields. From a list of 11 job characteristics, the students were asked to select those which they considered important in selecting a job or career. Expected career employers were subdivided into four groups: business, college and research, government, and other (schools, hospitals, self-employment, welfare organizations).

Each job characteristic (occupational value) was ranked according to the proportion of students who agreed that value was important in choosing employment. To determine whether career values correlated with choice of employer alone, career field was controlled by treating the students from each career field as separate groups. Their occupational values were then correlated with their expected career employer.

To investigate attitudes toward various jobs in business, students were asked to respond to several questions by selecting statements which described their feelings.

RESULTS AND DISCUSSION

1. The proportion of students considering careers in business was slightly lower for those who attended public colleges and universities than for students from private schools (45% and 50%, respectively).
2. Graduates entering business included about 35% from small schools, 40% from medium-sized schools, and only 25% from large universities. This suggests a change in recruiting practices which now tend to concentrate on larger schools.
3. Correlating career employers with career fields, the proportions of students in the various career fields who were considering business as a long-term employer were: business (82%), engineering (78%), arts and sciences (34.2%), law and medicine (40%), education (3%), and all others (27.6%).
4. It appears that the fields of business and engineering have reached their potential as sources of talent. The arts and sciences seem to be the next most logical field for recruiting.
5. Occupational values rated highest in influencing job selection, based on the number of times listed by the students, included (in descending order): opportunity to be helpful to others, opportunity to work with people rather than things, and opportunity to be original and creative. (All of these values were listed by at least 50% of the students.)
6. When the students were asked to list the important values for each of the four types of employment, the chance to exercise leadership was the value most often listed for business, followed by opportunity for originality, and opportunity to be helpful; the opportunity for originality was the most common response for college/research, followed by living and working in the field of ideas, and opportunity to be helpful; the opportunity to be helpful was the top value for government, followed by opportunity for originality, and chance to exercise leadership; and the opportunity to be helpful was listed as the most common value for other areas of employement, followed by the opportunity to work with people rather than things, and the opportunity for originality.
7. The comparison of attitudes toward the job of

business executive, in relation to career field, was limited to the fields of business, engineering, and arts and sciences since these provide the bulk of the managerial and professional employment in private industry. The arts and sciences group was the least interested in the position of business executive—only 30.7% thought the job would be interesting, compared to 53.4% of the engineers, and 93.7% of the people in business.

8. It appears that college students are becoming more interested in the work they will be doing, regardless of whether the environment is business or something else. Negative attitudes toward a business career were not as pronounced as expected. The problem appears to be a lack of information about what is involved with a career in business. The problem thus becomes one of information and communication, rather than image rebuilding.

COMMENTS

The sample was limited to graduating seniors who responded to all four mail contacts; thus, it was apparently a self-selected sample. If the mail contact pertained to business each time, then bias toward business majors may have existed.

The sample may have been systematically biased when it excluded students who were not getting a degree or who were working on a degree requiring more than four years.

Result number 4 warrants comment. Eighteen percent of the business majors did not consider business as a long-term employer. Considering the large number of business majors, 18% constitutes an important pool of trained personnel to entice into careers in business. It is strange that while 93.7% of business students think that a career as a business executive would be interesting, only 82% actually enter careers in business. This is especially curious, considering that 78% of the engineers entered business careers when only 53.4% thought being a business executive would be interesting. Why do so many more engineers enter business careers than show prior interest is a question which offers the potential of identifying critical factors related to entering business careers. This discrepancy certainly warrants further examination.

62.

Students Assess Industry As a Potential Employer

Consumer Research Center (1966)

What are the attitudes of college students toward a career in industry?

POPULATION AND SAMPLE

The sample included 2,736 college juniors, seniors, and graduate students. A breakdown by major field of 2,164 students in the sample revealed: engineering 248, business 688, liberal arts 856, and science and math 372. (The report of the study included no further description of the sample or techniques used in sampling.)

INSTRUMENTATION AND DATA

A questionnaire designed by the Consumer Research Center (CRC) was administered to all students. It contained several questions concerning attitudes toward industry as a possible career field. Some of the questions were: "What are you looking for in a career?" "What career fields appeal to you?" "What items related to work atmosphere are important to your job satisfaction?"

DESIGN AND ANALYSIS

Responses were recorded and tabulated. The results were presented in terms of totals and percentages of students making similar responses. Comparisons were made between the most desirable career in industry (rated 100%) and the ratings of 16 other careers (rated 99% and lower).

RESULTS AND DISCUSSION

1. The group with the highest percentage of students desiring a career in industry was engineering (88%), followed by business (75%), science and math (64%), and liberal arts (36%).

2. Only 1% of the engineering majors stated they absolutely would not consider a career in industry, compared to 5% of the business majors, 14% of the liberal arts majors, and 4% of the science and math majors

3. The most desirable career field in industry was data processing and computers (100%), followed by space and aeronautics (99%). The other career fields received less and less agreement between students. The career field with the least agreement between students concerning its desirability was soaps, detergents, and toiletries (34%).

4. The results pertaining to work atmosphere showed chance for advancement was the major concern for the entire sample, followed by job security, position of responsibility, opportunity to solve problems, suitable location, position with prestige/status, fringe benefits, and opportunity to travel.

5. Responses related to work itself showed that work should be interesting/enjoyable/satisfying, followed by demanding/challenging. Other factors of decreasing importance included work focused on people and work involving teaching.

6. The careers expressed as the most desirable by each of the four college major groups were: engineering—science/engineering; business—corporate management; liberal arts—profession such as law or medicine; and science and math—science/engineering. As a group, the sample selected the professions such as law or medicine as most similar to their career expectations.

7. The students offered the following suggestions for the improvement of the recruiting process: be more personal in dealings with students, offer summer employment, arrange trips to home offices, offer scholarships, and show more interest in campus affairs.

COMMENTS

It is difficult to determine how much confidence can be placed in these results because there is a lack of information concerning the sample and sampling techniques.

When questioning student perceptions of the desirability of a career in one field or another, the nature of the sample is a critical factor. Further, if the assessment asks about only one field and does not provide a comparison with other fields, it is difficult to judge if the ratings result from general attitudes toward careers, work, etc., or are specific to the career field.

63.

Education Level, Attitudes, and Future Expectations Among First-Level Management

Klein, S. M. and Maher, J. R. (1968)

What are the nature and dynamics of the relationship between education and job-related attitudes of first-level managers?

POPULATION AND SAMPLE

The sample included all first-level managers connected with the electronics manufacturing division of a large manufacturing company. The population contained both college and non-college trained personnel. All held positions at approximately the same level in the same organization. The size of the total sample (N) was 727. (The report of the study did not specify what percent of the total population N represented, or the procedures used in selecting the managers.)

INSTRUMENTATION AND DATA

The instrument used was a 426-item questionnaire administered on company time. The instrument was taken anonymously, and the managers were assured that the results would be reported only in terms of group results. The questionnaire required approximately two hours to complete.

The variables investigated by the questionnaire were: expectations of input and outcomes (contributions and rewards), satisfaction with present outcomes (satisfaction with salary, benefits, and superiors), education (how much education acquired by the individual from grade school to master's degree), age, and skill level (types of jobs supervised by the manager). Age and skill level were included to insure that results would be attributable to education rather than some demographic factor.

DESIGN AND ANALYSIS

Two hypotheses were posed for consideraton in this study:

Hypothesis 1—College educated managers should expect to contribute more to their company than non-college educated managers.

Hypothesis 2—Holding job level constant, college educated managers should be less satisfied with job outcomes than non-college educated managers. (These hypotheses are based on two assumptions—college education is perceived as a relevant input, and expectations about the future are primarily a function of this input.)

An analysis of variance program for unequal Ns was used. F ratios were computed using the general linear hypothesis model, thereby allowing more control over possible confounding effects of age and skill level parameters.

RESULTS AND DISCUSSION

1. The hypothesis that college educated managers should expect to contribute more to their company was supported. The main effect of education on expected input was significant at the .01 level. None of the interaction effects involving education were significant. This finding supports the assumption that education is a relevant job input, since educated people believe they are of greater value to the company because of their education.

2. The data showed college educated managers to be more optimistic about future salary increases than their non-college educated counterparts. This result, obviously, does not support the hypothesis of expected dissatisfaction among college educated personnel. The data also show that college educated managers were not significantly different from non-college managers in expecting promotions to high-level positions.

3. Salary was the most relevant job-related outcome in this study in terms of prediction of perceived inequity (dissatisfaction). College educated managers felt their pay was not commensurate with their contributions.

COMMENTS

The second hypothesis (college educated managers will show more dissatisfaction with job outcomes) does not logically have to follow the observation that college educated managers feel they are making a greater contribution. It is interesting to note that the college educated managers were more dissatisfied with their present salary than their non-college educated counterparts, but they seemed to believe that the perceived discrepancy between contribution and salary would be corrected in the future. It would be interesting to follow such a group through several years to determine what happens when their expectations are, or are not, met.

It may be inappropriate to generalize the results of this study to populations outside the one described. Certain results may be a product of biases in the company concerning the value of college educated managers.

64.

A Correlation-Casual Analysis of the Relationship Between Expectancy Attitudes and Job Performance

Lawler, E. E., III (1968)

Are expectancy attitudes influencing factors for job performance?

POPULATION AND SAMPLE

The sample consisted of 55 managers in social services agencies (YMCA, visiting nurse service, Girl Scout Council, and city department of health). Forty-one individuals were considered first-level supervisors; the remaining 14 were at higher levels. (A more complete description of the sample was not provided in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were a short questionnaire and a ranking form. The questionnaire was designed to measure reward-expectancy attitudes, and the relative importance (to the manager) of six reward items (pay, promotion, prestige, security, autonomy, and opportunities to use skills and abilities).

Job-performance was ranked on a form by peers and superiors.

DESIGN AND ANALYSIS

All managers were given identical questionnaires and ranking forms at each of two meetings, one year apart. On the questionnaire, they were first asked to use a 7-point scale to indicate the helpfulness of six factors in obtaining the rewards in their organization. Two of the factors concerned this study—hard work and quality of job performance. The second part of the questionnaire required each manager to indicate how important each of the six reward items were to him. A 7-point scale was used (7 was most important).

The relative importance of each of the six reward items was multiplied by the degree to which it seemed obtainable from hard work and good job performance. The results of these two multiplications were then totaled for each of the six rewards to give each manager a composite expectancy attitude measure.

Peer rankings and superiors' rankings of each manager were compared ($r = .56$).

Analysis of the data included the Pearson product-moment correlation (r) between the two performance measures, multiple correlation coefficients involving several comparisons of attitude measure with performance measure, and the average Pearson r for the six rewards to determine the correlation between expectancy attitude measures.

RESULTS AND DISCUSSION

1. Multiple correlation coefficient of changes in attitudes, and changes in performance, as rated by supervisors, was not significant.
2. The relationship between attitudes and superiors' performance measures indicated that attitudes cause performance.
3. Multiple correlation coefficient of changes in attitudes, and changes in performance, as rated by peers was not significant. These data did not indicate that attitudes cause behavior.
4. The correlation between changes in the expectancy attitudes and the changes in performance measure was significant.
5. "The results of this study generally support the view that expectancy attitudes can cause performance."

The possibility of a third variable influencing attitudes, and eventually performance, was not ruled out in this study.

COMMENTS

The description of the sample was incomplete, and the sampling techniques were not explained in the report of the study.

The conclusion that attitudes cause performance was not adequately supported by the data. It is important to note that correlational data can be analyzed in such a manner that the direction of causal relationships can be deduced. It is refreshing to see such an attempt.

65.

Attitudes Toward Business as a Function of Student Quality and Career Intention

Lawrie, J. W. (1968)

What are the attitudes of college students toward careers in business, and what factors influence these attitudes?

POPULATION AND SAMPLE

The sample consisted of 91 male students randomly drawn from a total population of 850 students at Wabash College. Wabash is a midwestern, privately endowed liberal arts college for men.

INSTRUMENTATION AND DATA

The instrument used was a specially constructed questionnaire designed to measure such variables as career goals, contributions of business to achievement of career goals, attitudes toward business, and ratings of various associates and their influence upon career choice. The students responded to the instrument anonymously. (The reliability or validity of the instrument was not provided in the report of the study.)

DESIGN AND ANALYSIS

Responses on the questionnaire were tabulated. The data pertained to five hypotheses: (1) the majority of college students do not want business careers; (2) this trend is prominent among academically superior students; (3) this trend is because: (a) they have value conflicts with those of business, (b) their professors have influenced them away from business, (c) life in a corporate setting would not be satisfying to them.

Bi-serial correlation was used to study relationship of grade point average (GPA) to business intentions.

RESULTS AND DISCUSSION

Hypothesis 1 was supported—only 27% of the students expressed a desire to go into business.

Hypothesis 2 was supported—GPA and business intentions showed a negative correlation of –.38 (.05).

Hypothesis 3a was supported—data indicated that the students did not feel business could offer them what they were seeking.

Hypothesis 3b was not supported—data showed that faculty members were rated no higher than other people for influencing career choice.

Hypothesis 3c was supported to a degree—results showed that attitudes toward business are not independent of career intentions; i.e., students planning on non-business careers viewed business in a less positive way than did those with business intentions.

COMMENTS

The obvious bias of the sample may account for the results of the study. A survey of the attitudes of college students, in general, cannot be conducted in a small liberal arts college with a highly select student body. Because of the biased sample, it is probably not possible to generalize the results of this study and apply them to other groups with any degree of confidence.

66.

College Student Attitudes Toward a Life Insurance Career

Life Office Management Association and Life Insurance Agency Management Association (1967)

What are the attitudes of college students toward a life insurance career?

POPULATION AND SAMPLE

Professors from 12 colleges and universities administered the questionnaire to entire classes of students (in most cases, classes in business administration). The sample consisted of 709 students. No attempt was made to obtain a representative sample. Business administration students were heavily sampled, assuming that they would be more knowledgeable about life insurance and less committed to specialization in other fields. Eighty percent of the sample were junior and senior students. The sample was 84% male, and 86% were 20 years of age or older.

INSTRUMENTATION AND DATA

All students were administered a questionnaire designed to obtain biographical data and to assess their attitudes concerning a career in life insurance. A list of nine factors was derived from previous studies. These factors were shown to concern students in selecting careers: opportunity for personal development, stable and secure future, interesting work, good working conditions, prestige and social standing, good income, social value and service, quality of training, and independence.

First, the students were asked to rate each item on a 5-point scale depending upon the importance of that item in their selection of a job. The scale increased in importance from 1 to 5.

Secondly, the students were asked to rate a series of specific occupations according to the degree they felt that occupation satisfied each factor. Each occupation was rated separately for the nine factors. The occupations covered the professions, manufacturing, banking, merchandising, life insurance, education, and government.

DESIGN AND ANALYSIS

The ratings for the nine factors were averaged separately for four groups: Group 1 (male, junior and senior business administration majors), Group 2 (all other male juniors and seniors), Group 3 (male freshmen and sophomores), and Group 4 (all women). The nine factors were ranked, in order of importance, for each of the four groups.

The junior and senior business administration students' ratings of each of the occupations for the nine factors were averaged, and the occupations were ranked accordingly. (No statistical tests of significance between rankings were reported.)

A career in life insurance was compared to each of the other occupations. The comparisons were made on the basis of the nine factors and tabulated separately for the four groups. Each comparison was either favorable, unfavorable, or neutral toward life insurance. There were 54 possible comparisons for each of the four groups.

RESULTS AND DISCUSSION

1. Average ratings for the nine job factors showed considerable agreement across the four groups. For the three groups involving male subjects, the most important factor was opportunity for personal development and advancement, followed very closely by interesting work. The group consisting of only women reversed the order of the two most important factors for men. The rank order of the remaining seven factors for the Group 1 was: good income, stable and secure future, independence, good working conditions, quality training, prestige, and social value and service.

2. The mean ratings for the specific occupations, on each of the nine factors, revealed different ranking across the nine factors. The professions ranked highest on seven of the nine factors. Government work ranked highest on the stable and secure future factor, while education ranked first for social value and service. Life insurance ranked in the bottom half of the order on all factors except independence, where it ranked number two.

3. Comparisons between a career in life insurance and each of the other occupations revealed: Group 1—favorable 9, unfavorable 30, neutral 15; Group 2—5, 22, and 27; Group 3—5, 21, and 28; and Group 4—4, 25, and 25, respectively.

COMMENTS

The results indicate that the sample was not favorably impressed by life insurance as a career, when compared with other occupations included in the study. The reasons for their disinterest are not obvious, and possibly warrant some investigation.

67.

Marriage and Career Attitudes of Women in Selected College Curricula

Mintz, R. S. and Patterson, C. H. (1969)

What are the attitudes toward marriage and career of women in selected college curriculums?

POPULATION AND SAMPLE

The population included 2,298 women students at the University of Illinois—62 in occupational therapy, 378 in science education, and 1,858 in science. Two-hundred names were randomly selected from student rosters: 30 (every other name) in occupational therapy, 80 (every fifth name) in science education, and 90 (every 20th name) in science. A short questionnaire was sent to each of the 200 students selected.

A total of 126 (60.3%) returned usable questionnaires in time to be included in the analysis. (A definition of the time allowed for response was not provided in the report of the study.) The 126 students were classified as: Group 1 (occupational therapy, N=19), Group 2 (science education, N=41), and Group 3 (science, N=66). The academic plans of the students revealed: Group 1—100% B.S. only; (Group 2)—37% B.S. only, 47% M.S., and 14%

undecided; (Group 3)—23% B.S. only, 45% M.S., and 32% doctorate. Across all groups, the totals were: 64 students—B.S. only, 41—M.S. degree, and 21— doctorate.

INSTRUMENTATION AND DATA

The data were collected using a 29-item Likert-type questionnaire covering four areas: marriage, motherhood, homemaking, and educational and professional roles. Responses to the items employed a 5-point scale, ranging from strongly disagree (1) to strongly agree (5).

DESIGN AND ANALYSIS

Analysis of the data involved the computation of group means and standard deviations. In addition to the three groups based on curriculum area, the students were also grouped according to college degree to which they aspired. Differences among the means were computed and tested for significance.

RESULTS AND DISCUSSION

1. All differences among the curriculum groups were significant, except that between Group 1 and Group 2. (Significance in most cases was .01.)
2. All differences among the three degree groups were significant, both for differences within curriculum groups and for the degree groups combined.
3. The students in Groups 1 and 2 were more feminine and traditional in their attitudes than those in Group 3, who were more career-oriented.
4. The students aspiring to only the B.S. degree were found to be more traditional in their attitudes than those aspiring to the M.S. or doctorate degree, who were career-oriented.
5. An analysis of the four areas covered by the questionnaire (motherhood, marriage, homemaking, and educational and professional goals) revealed that all students, combined, were more traditional than liberal in their attitudes concerning the first three areas. They tended to be more liberal than traditional in their attitudes concerning educational and professional roles. They generally felt that marriage, family, and home were more important than career, but there was room for both. The doctorate aspirants were an exception to this finding. Their plans included working in their career field for their entire lives.

COMMENTS

The sampling techniques used by the author cannot be interpreted as "random." No rationale was provided for the methods of selecting samples to represent each major area. Further, the sample of academic areas used in this study seems atypical or, at least, very incomplete.

68.

How College Students See Business as a Career and How They View the Role of Business and Government

Society for the Advancement of Management (1968)

How do college seniors and graduates view business and its position in the world today, its responsibilities toward society, and its potential as a career field?

POPULATION AND SAMPLE

Questionnaires were distributed to male college seniors and graduates of 200 representative colleges and universities across the nation. The questionnaires were distributed through the Society for the Advancement of Management's (SAM) University Division. The questionnaires were completed by the students in group sessions conducted by the campus chapters of SAM. The final sample consisted of 2,411 students who returned usable questionnaires. Approximately one-third (769) of the students were drawn from non-business majors (education, engineering, humanities, etc.); the remaining two-thirds (1,642) were majors in business administration.

INSTRUMENTATION AND DATA

The questionnaire was designed to ascertain the attitudes of the students about business in three main areas: their views of business and its position in the world today; the responsibilities of business (as they perceived them) regarding its relationship to society; and the possibilities of business as their career field. Most of the questionnaire items provided for several degrees of positive-negative response. To simplify reporting, data from the two most positive responses were combined.

DESIGN AND ANALYSIS

The results were expressed as percentages of students responding in given ways. (No tests of significance of difference between percentages were noted in the report of the study.)

RESULTS AND DISCUSSION

1. Business has a favorable image among students, as evidenced by the fact that 85% felt that business has aided the development of society, created jobs, and met the demands of society. The students described business leaders with such adjectives as hard-working, well-trained, dedicated, intelligent, and imaginative.
2. Business has not fully assumed its social responsibilities in certain areas. This was illustrated when 60% felt that business was doing its part to support universities, science, and improvement of the community, while only 15% felt that business was doing what it should to help the needy, minorities, and control air pollution. Students saw government and business as working together to provide leadership in raising the standard of living, eliminating racial strife, and combating air and water pollution.
3. Nearly 80% of the students expected a high degree of satisfaction from a career in business; 55% indicated business as their first choice; 24%, their second.

COMMENTS

The results of this study are difficult to interpret because of the sample used. Findings showing a positive attitude toward business by students predominantly in a business curriculum are not to be interpreted as evidence that business has a favorable image among students. What percent of the non-business students responded favorably toward business? The fact that some of the business majors apparently considered careers in non-business settings (55% of the sample indicated business as their first choice, while 66% of the sample were business majors) may indicate just the opposite of the authors' conclusions regarding satisfaction with a career in business.

69.

Who and What Influence Student Attitudes Toward Occupations?

Stevens, N. D. and Stephens, E. W. (1968)

Who and what influence student attitudes toward career choices in business and government?

POPULATION AND SAMPLE

The sample consisted of approximately 300 students from 20 universities and colleges. (The results were based on evidence from the East Coast area, since responses from the West, Midwest, and Southwest were insufficient to produce a regional pattern.)

(No further description of the students or sampling techniques was provided in the report of the study.)

INSTRUMENTATION AND DATA

The data were gathered through personal interviews with each student. The interview was designed to evaluate his attitudes toward business and government, and how well the student felt his interests would attract him into one of the two fields (business and government).

(No further description of the information obtained from the interview was provided in the report of the study.)

DESIGN AND ANALYSIS

Students were divided by geographical location of their college into either East or South.

Responses by the students during the interview were interpreted and then classified with similar responses from other students. The results were reported as totals and percents.

RESULTS AND DISCUSSION

1. The percent of students who expressed interest in a career in business were: men—(East) 77% and (South) 43%; women—(East) 85% and (South) 79%.
2. The percent who expressed interest in a career in government were: men—(East) 23% and (South) 25%; women—(East) 42% and (South) 33%.
3. Factors influencing students' attitudes about careers in business and government included: family, especially the father; college and placement counselors; student observations and interpersonal relationships established through part-time employment; environmental atmosphere and working conditions (strong negative reaction); and value judgments the student makes about responsibilities, independence, education, and creativity.

COMMENTS

In what ways do the factors listed in Result 3 affect the students' choices of business or government careers?

70.

Business Comes Out on Top

Tingey, S. (1968)

What are the attitudes of university students toward business as a career field?

POPULATION AND SAMPLE

A random sample of 200 was drawn from a population of 2,498 graduating seniors at Arizona State University in 1967. The final sample was reduced when only 110 students completed and returned a questionnaire. (No further description of the sample was included in the report of the study.)

INSTRUMENTATION AND DATA

The data were collected by a questionnaire designed to assess students' attitudes toward business as an occupational choice, and toward business in general. Students were asked to select from a list of seven job characteristics, the ones they felt most important for job satisfaction. The responses were weighted three points each time a characteristic was listed as first choice, two points for second choice, and one point for third choice.

The students were asked to state the occupational field that had contributed most to the national prosperity. They were given a list of 15 statements referring to business, in general, and asked to rate each statement using a five-point scale: strongly disagree, disagree, undecided, agree, and strongly agree.

DESIGN AND ANALYSIS

All responses were tabulated, and the percents of students responding favorably and unfavorably were determined.

RESULTS AND DISCUSSION

1. Approximately 57% of the students listed business as contributing most to national prosperity; only 6% listed government.
2. Approximately 32% thought they would eventually seek positions in business.
3. Absolute majorities agreed with seven of the 15 business statements. For the remaining eight statements, there were no clear-cut ratings, either agreeing or disagreeing. The seven statements rated as favorable to business were: fair pay, free enterprise, when business prospers the community prospers, better products, public spirited, ethical, and supply consumer needs.

COMMENTS

More than half of the students who responded to the questionnaire rated business as making more important contributions to the national prosperity than any other occupational field. Nearly one-half of the sample did not return the questionnaire. Whether they would agree with the students who did respond remains unanswered.

The questions do not appear to fit together, with the exception of the finding mentioned above, and the finding that students responded favorably to 7 of 15 business statements. Perhaps part of the perceived importance of business may result from the generally positive perception of business. One wonders if the relatively lesser importance (with respect to national prosperity) ascribed to other occupational fields is accompanied by fewer favorable statements than for business.

71.

Are Recruiters Listening?

Weale, W. B. and Ferrell, O. (1966)

What are some of the attitudes of college business students toward selecting a job with a company?

POPULATION AND SAMPLE

The sample was stratified, in terms of juniors, seniors, male/female, and various business majors. The size of the sample was approximately 500 students, or 37% of the undergraduate business students at Florida State University.

INSTRUMENTATION AND DATA

A questionnaire, consisting of 20 company characteristics considered to be important to prospective employees, was used; e.g., type of company, benefits, starting salary, etc.

Also included on the questionnaire were six questions which a recruiter might ask during an interview; e.g., "What are your ideas on salary?"

DESIGN AND ANALYSIS

The students were instructed to rank the 20 company characteristics in order of importance. A percentage of the frequency of an item appearing in the top five, or lower five, was computed.

The students also were asked to select, from the six interview questions, the one which they would most like to avoid answering during an interview. The percentage choosing each response was determined.

The *t* test was used to determine if the difference between means was significant.

RESULTS AND DISCUSSION

1. The frequencies with which company characteristics were listed by the students as being one of the five most important to them were: (a) advancement possibilities (78.8%); (b) doing work I like (74.4%); (c) security and sense of future (54.2%); and (d) starting salary (53.2%).

Similar items listed as least important were: (a) company hires college students only (91.1%); (b) job with high status (51.1%); and (c) company that is well known (50.0%).

2. Of the six interview questions, the two most often listed as objectionable (significant at .01 level) were: (a) What are your major weaknesses? and (b) What job in our company do you want to work toward?

COMMENTS

The results of a study such as this should always be interpreted in light of the specific materials used. In this case, the most important factors in selecting a company to work for should be interpreted as "the most important of those listed." The list used in this study is similar to the lists used in several other studies. It is, perhaps, more important to be aware that the least liked (most objectionable) questions should be interpreted as "the most objectionable of the six listed."

72.

Attitude Differences in Identification with Management

White, J. C. (1964)

What are some attitude differences in identification with management?

POPULATION AND SAMPLE

The sample included 80 bankers—11 were officials undergoing supervisory training; 16 were female. (The report of the study provided no other sample or selection information.)

INSTRUMENTATION AND DATA

"A test of Supervisory Judgement, Form 0140-II, published by Richardson, Bellows, Henry & Co., Inc. was given to all participants. This is an untimed instrument, consisting of business-oriented questions with multiple-choice type answers, involving how one feels about managing others, being responsible for planning, exercising initiative and foresight, administering company policy, etc. Norms have been set by RBH through weighting patterns of answers given by groups of successful (versus marginal) supervisors, on whom the scoring system was standardized."

DESIGN AND ANALYSIS

The bankers were categorized into groups: officials (all of whom were males); females (none of whom were officials); non-officer males over 45 years old; and non-officer males under 45. The latter group was then subdivided by the training officer, personnel officer, and personnel assistant into (a) those young men who are apparently of executive potential, and (b) those who do not seem to have such capacity.

Means and standard deviations were derived for each group, and a *t* test for significant difference between means was applied between all groups.

RESULTS AND DISCUSSION

1. The 11 bank officials had the highest mean score, which fell at the 66th percentile for executives.
2. There was no significant difference between officials and the 36 young men believed to be of executive ability.
3. Twelve female participants scored significantly lower (.05 level) than the executives and the potential executives.
4. There was no significant difference between the scores of the older men (over 45) and the low potential younger men, but both groups scored significantly lower (.01 level) than the executives and potential executives.

COMMENTS

There seemed to be a measurable degree of identification with management, and it appears this identification is in turn related to individual progress in achieving a managerial position.

The author pointed out that the low score made by females was not surprising, since this study was done in a locality where few women have been encouraged to become bank officials.

VALUES

73.

Anticipated Occupational Frustration: A Follow-Up Report

Glick, P., Jr. (1965)

What is the extent of anticipated occupational frustrations and changes in occupational values in a group of college undergraduates compared as freshmen and as seniors?

POPULATION AND SAMPLE

The sample included 70 of 119 freshmen majoring in agriculture at Delaware Valley College of Science and Agriculture during the 1960-61 school year. The 70 students were those who were still enrolled as seniors in 1963-64 and who responded, both during their freshman year and their senior year, to an eight-item questionnaire.

INSTRUMENTATION AND DATA

The instrument used was the Three-Dimensional Classification of Occupations Instrument which was specially designed for the 1960-61 study.

The students' occupational aspirations and expectations were coded according to three occupational dimensions (level, field, and enterprise) before they were compared. Occupational frustrations were defined by the degree of similarity between occupational choice and the three dimensions of level, field, and enterprise. The more dissimilar these dimensions, the higher the frustration level. The dimensions of anticipated occupational frustration ranged from 3 to 0.

Eleven occupational values (described in another article by the author) were used in the 1960-61 study, and again in 1963-64, to determine any changes in the value structure of the students over the four-year period.

DESIGN AND ANALYSIS

The statistical treatment of the data involved the computation of percentages and the chi-square test of significance.

RESULTS AND DISCUSSION

1. Results indicated a decrease in the extent of anticipated occupational frustration among the 70 students over four years of college enrollment (chi-square was significant at the .05 level).

2. Comparison of occupational values indicated significant changes on 7 of the 11 values: self-realization, relations with others, advancement, and prestige were significantly more important to them as seniors than as freshmen; security, independence, and working conditions were significantly less important to them as seniors.

COMMENTS

No statement of the reliability or validity of the instrument was included in the report of the study.

The procedures of this study were difficult to follow because an adequate description of the types of items included in the instrument was not available.

The utility of the findings of this study are limited because of the non-representativeness of the sample.

It appears that seniors in agriculture anticipate less occupational frustration than they did as freshmen. The data suggest an occupational value shift between the freshman and senior years. The value and possible utility of these findings are not absolutely clear.

74.

Interpersonal Values and Leadership

Litzinger, W. D. (1965)

What are the interrelationships of interpersonal values and leadership attitudes of branch bank managers in two separate and distinct organizational environments?

POPULATION AND SAMPLE

The sample was taken from two banking organizations with branch offices throughout the greater Los Angeles area. The banks were classified as centralized or decentralized, based upon the authority held by the branch managers to grant commercial loans. The sample included 65 branch managers: 33 managers represented the centralized banking organization; 32, the decentralized. The managers included in the sample were representative of the population of managers employed by each organization.

INSTRUMENTATION AND DATA

The Gordon Survey of Interpersonal Values (SIV) was used to measure six value dimensions: support, conformity, recognition, independence, benevolence, and leadership.

Two leadership dimension scores (structure and consideration) were measured using the Leadership Opinion Questionnaire (LO).

Questionnaires were completed by the managers during management training workshops conducted by each bank.

DESIGN AND ANALYSIS

The two groups of branch managers (centralized and decentralized) were compared in terms of mean scores for each of the variables measured. Correlations between the six scales of the SIV and the two dimensions of the LO were computed.

Scores for the two groups were compared with available scores of other similar groups (supervisors, department managers, and group managers) on each of the variables measured.

RESULTS AND DISCUSSION

1. Branch bank managers were comparable to other similar level managers on the structure and consideration scales.

2. No significant differences were found between the two sample groups on the eight scales used.

3. Chi-square analysis showed a disproportionate number of decentralized managers below the median on the benevolence scale (.01).

4. Of the 24 correlations between the 6 scales of the SIV and the 2 manager groups' mean scores on the structure and consideration scales, only a single correlation (support, and centralized on the structure scale) was significant at the .05 level.

5. Comparison of the intercorrelations among the six value scales, for each of the two groups, showed no marked differences in correlation pattern.

COMMENTS

There do not appear to be any significant differences between the two groups measured in this study. The question raised does not seem to be a very important one, since centralized or decentralized systems may not be a major consideration of prospective bank employees who later become managers. If this were a factor for consideration in seeking a position, then differences might be expected.

75.

Relationships of Values and Occupational Role Perceptions for Freshmen and Senior Students in a College of Engineering

Olive, L. E. (1969)

Does the degree of congruence between values and perceptions of the occupational role of engineers increase from the freshman to senior year for engineering majors?

POPULATION AND SAMPLE

The population included all male freshmen enrolled in the College of Engineering at the University of Nebraska during the fall of 1961 (N=321). The entire population was administered a series of tests to determine values and occupational role perceptions. In 1965, the entire graduating class of engineers (N=213) was administered the same set of instruments given the freshmen in 1961. From the freshmen population, 47 individuals were included in the graduating class. It took most of the students five years to graduate. The 47 students were compared to other members of the group, both as freshmen and graduates. The *t* test results showed that those 47 did not differ significantly from the rest of the group and could be included in the sample.

INSTRUMENTATION AND DATA

The Poe Inventory of Values (PIV) was used as the measure of personal values. The PIV measured eight areas: intellectual, aesthetic, religious, humanitarian, social contact, power, prestige, and material. The PIV reported reliability coefficients ranging from .84 to .93. Responses on the PIV were measured on a 5-point scale to determine agreement or disagreement with statements involving value objects such as, "working for the welfare of others is the highest aim of mankind."

The measure of occupational role perception was obtained by the Occupational Role Perceptions Inventory (ORPI). It was described as "a conceptual scheme for 'orientations toward work'. . . developed in order to categorize the student's perceptions of his chosen occupation." The ORPI contained five areas of work orientation: scientific (intellectual), aesthetic (self-expression), non-hierarchical people (socialize with other people as equals), hierarchical people, and material (handling money, investing).

The ORPI utilized 127 items as descriptors of a form of behavior which may be involved in a particular occupation. The students selected those items which described a typical behavior in his chosen occupation; i.e., "Determine people's needs." Analysis of the ORPI and the PIV showed that the two inventories measured different characteristics. (An explanation of the analysis of the two inventories was not included in the report of the study.)

DESIGN AND ANALYSIS

Correlation coefficients were computed for scores from the eight value areas and the five "orientations-toward-work areas." "The Wilcoxon matched-pairs signed-rank test. . .was used to compare the correlation matrix of freshmen engineers with senior engineers."

Three hypotheses were tested:

Hypothesis 1—"There is no greater congruence between values and occupational role perceptions for student engineers as seniors than as freshmen."

Hypothesis 2—"There are no significant differences between freshmen and senior engineering students' personal values."

Hypothesis 3—"There are no significant differences in the perceptions of the chosen occupational role for freshmen and seniors."

RESULTS AND DISCUSSION

1. Significant positive correlations between values and occupational role perceptions were observed in 18 of 40 correlations for freshmen, and 27 of 40 correlations for seniors. Hypothesis 1 was rejected.

2. The power value and hierarchical people orientation appeared to be related significantly across all variables for seniors.

3. Hypothesis 2 was rejected. Significant differences were found in four of the eight values. Seniors were significantly more sensitive to aesthetic things, and more strongly motivated by power and influence over others. Seniors were significantly lower on the material and religious values.

4. Hypothesis 3 was rejected for 2 of the 5 role perceptions: scientific-intellectual and hierarchical people. Seniors perceived their chosen career to involve less scientific knowledge than did freshmen. Seniors perceived the occupational role as providing them more opportunity of leadership positions than did freshmen.

COMMENTS

None.

76.

Values and Post-College Career Change

Underhill, R. (1966)

Which is the cause and which is the effect in the values/career choice relationship?

POPULATION AND SAMPLE

The sample included 1,712 males who responded to the first and second questionnaires from the National Opinion Research Center (NORC) in 1961. The original NORC sample included 28,713 college seniors, selected from 135 colleges and universities.

INSTRUMENTATION AND DATA

The questionnaire asked respondents to select, from a list of approximately 100 careers, their anticipated long-range career field. The 100 careers were combined into 10 categories: education, medicine, law, business, engineering, physical sciences, biological sciences, humanities, social sciences, and other.

The respondents were also asked to select, from a list of 10 occupational values, all those values or characteristics of a job they felt were important in selecting a job or career. The 10 values were: (1) making a lot of money; (2) opportunity to be original and creative; (3) opportunity to be helpful; (4) avoiding high pressure jobs; (5) working in the world of ideas; (6) freedom from supervision; (7) opportunity for moderate but steady progress, as opposed to extreme chances of failure or success; (8) chance to exercise leadership; (9) opportunity to work with people, rather than things; and (10) none of the above.

Six values were found to relate to choices of particular careers: (1) money, (2) original, (3) helpful, (5) ideas, (8) leadership, and (9) people. Two adjectives, which were also related to career choice, were taken from a section of the questionnaire called self-descriptive adjective check list. The adjectives were intellectual and ambitious. The six values and two adjectives were used to construct three indexes depending upon the values the respondent selected as being important to him. Each of the 10 occupational categories could be characterized by certain value indexes, or combinations of indexes; for example, the values, people orientation and intellectualism, were found to be the best predictors of occupations in the humanities.

DESIGN AND ANALYSIS

Career plans and values were measured for each individual on two separate occasions. The design included a 16-fold table which was used to measure changes in career plans and values. The table cross-tabulated four dichotomous items: career at time one, career at time two, values at time one, and values at time two. Sixteen-fold tables were constructed for seven career categories (biological sciences, social sciences, and other categories were not analyzed).

The following four summary measures of association were computed from each 16-fold table:

1. "The association between values at time one and career at time two among those who were in the career at time one. This coefficient indicates the effect of values on career loyalty."
2. "The association between values at time one and career at time two among those who were not in the career at time one. This measures the effect of values on recruitment to the career."
3. "The association between career at time one and values at time two among those with consistent values at time one. This measures the effect of the career on value retention."
4. "The association between the time one career and the time two values among those without consistent values at time one. This measures the effect of the career on the adopting of consistent values."

RESULTS AND DISCUSSION

1. The results showed that values seemed to have a stronger influence than career on the individual, during the years after graduation, in the occupational categories of humanities, education, and law.
2. Career was the more important influence on the individual in the categories of business, physical science, engineering, and medicine.
3. "Thus it appears that: (1) where values affect loyalty, they also affect recruitment; (2) where career affects value retention, it also affects the adopting of values, (3) the greater the influence of values, the less the influence of career; or conversely, the greater the influence of career, the less the influence of values."

COMMENTS

Only general results were reported in this abstract. It is suggested that reference be made to the original article for more detailed findings.

ABILITIES

77.

Four-Year and Two-Year Engineering Students: A Comparison of Abilities

Elliott, E. S. (1968)

Do successful and unsuccessful students in four-year and two-year engineering programs differ from each other in ability?

POPULATION AND SAMPLE

The total sample consisted of 600 (12 samples of 50) Pennsylvania State University freshmen (1960-1962) from the school of engineering.

Students were selected from electrical engineering (EE) and mechanical engineering (ME) to represent the four-year program. Students for the two-year associate degree program were selected from electrical and electronic technology (EET) and drafting and design technology (DDT). (A complete description of sampling techniques was not provided in the report of the study.)

INSTRUMENTATION AND DATA

The instrument used was the Pennsylvania State University Academic Aptitude Examination (UAE). It consists of four subtests: vocabulary, paragraph reading, arithmetic computations, and algebra.

DESIGN AND ANALYSIS

A 2x2x2 factorial analysis was used for level of program (two-year or four-year), type of program (ME or EE), and academic status (graduate or dropout).

RESULTS AND DISCUSSION

1. The main effect for level of program was significant, with four-year and two-year engineering students differing consistently in ability. The four-year students possessed greater ability than the two-year students, as measured by scores on the UAE. The main effect for type of program (ME or EE) was not significant.
2. The hierarchy of scores on the UAE (from high to low) was four-year graduates, four-year dropouts, two-year graduates, and two-year dropouts.
3. The math subtest of the UAE discriminated between graduates and dropouts. The main effect for academic status was significant for the math subscore of the UAE, with graduates scoring higher than dropouts.
4. The distribution of students was bimodal with overlapping between the means. Location on the distributions indicated relative probability of success or failure in either two-year or four-year programs.

COMMENTS

Results appear to be valuable for counselors of potential engineering students. In programs like those at Penn State, students of high ability (especially in math) are more likely to graduate from the four-year engineering program than other students of low ability. Students of relatively low over-all ability who are, nevertheless, high in math ability are likely to graduate from the two-year associate degree program.

78.

Significance of Personality in the Vocational Choice of College Women

Elton, C. F. and Rose, H. A. (1967) Study #1

To what extent do personality and scholastic ability influence the selection of career roles and vocational choices of college women?

POPULATION AND SAMPLE

"The student population studied consisted of all female freshmen with complete test data who entered the University of Kentucky in the fall semester of 1965." The total population equaled 637.

INSTRUMENTATION AND DATA

"The independent variables were five personality scores and one measure of scholastic aptitude."

The 5 personality scores were obtained through a factor analysis of the 16 scales of the Omnibus Personality Inventory (OPI). The factors identified were: tolerance and autonomy, suppression-repression, masculine role, scholarly orientation, and social introversion.

The measure of scholastic aptitude was the composite American College Test (ACT) score.

Each student selected, from a list of 83, the one academic major which best described her future vocation. The students were then grouped according to their expressed vocational-choice: social-religious-educational (N=211), administrative-political-persuasive (N=33), business and finance (N=21), scientific (N=25), medical (N=117), arts and humanities (N=60), undecided (N=134), and not listed (N=36).

DESIGN AND ANALYSIS

Multiple-discriminate analysis (with the five personality scores and one measure of scholastic aptitude as the independent variables, and vocational choice as the dependent variable) was used in analyzing the data.

"The discriminating power of the predictors was tested by chi-square. . . ."

RESULTS AND DISCUSSION

1. The ACT and Scholarly Orientation variables differentiated between students choosing business and finance, and those choosing arts and humanities, and placed them at opposite ends of the intellectual abilities continuum. Bright students were attracted to the arts and humanities, while the less bright students chose business-related vocations.
2. Scholarly orientation, masculine role, and tolerance and autonomy contributed to a second dimension which differentiated administrative-political-persuasive and scientific groups. The students who chose administrative-political-persuasive showed lower masculine role scores than those in the scientific group.
3. Scholarly orientation was found to be the single most discriminating variable.

COMMENTS

These results do support the findings of other studies that personality and ability do influence a person's choice of major field and vocation.

79.

Intellectual Ability and Promotional Success Among High Level Managers

Krant, A. I. (1969)

What is the relationship between promotional success and intellectual ability of high level managers?

POPULATION AND SAMPLE

The sample consisted of five groups, and included all personnel of a large corporation who attended management training programs in 1960, 1962, and 1963, and who were still with the company in November 1967. All employees attended one of two sections of the management training programs—Management School (MS) or Executive School (ES). The five groups were: (1) 128 MS 1960; (2) 107 MS 1963; (3) 62 ES 1960; (4) 33 ES 1962; and (5) 35 ES 1963.

INSTRUMENTATION AND DATA

Two instruments were used in this study: the Concept Mastery Test (CMT) and the Ship Destination Test (SDT). The CMT is "a measure of ability to deal with abstract ideas at a high level." The SDT is a comprehensive measure of general reasoning ability. The instruments were administered as part of the management training program. The SDT was not administered to the 1960 groups. Other measures, such as peer and staff ratings and certain demographic data, were obtained as part of the training program procedures. There were 13 items included in the peer ratings: ability to think critically, think analytically, judgment, originality, independence of thought, emotional maturity, cooperation, tact, aggressiveness, self-expression, leadership breadth of knowledge and interests, general impression, and capacity for advancement.

DESIGN AND ANALYSIS

"The criterion of success used in this study was the number of position levels moved after attending the training, as of November 1967." There were about 21 levels that covered the range of positions. An average of about two position levels was found for the groups. One employee advanced 14 levels.

SDT and CMT scores were correlated separately, with the criterion of success and other measures, for each of the five groups.

RESULTS AND DISCUSSION

1. Formal education was significantly related to CMT scores in groups 1, 2, and 3 at the .01 level.
2. Staff ratings were significantly related to CMT scores in groups 1, 2, and 5.
3. Peer ratings of critical and analytical thinking correlated significantly with DMT scores in all five groups at the .01 level.
4. Group 2 CMT scores were significantly related to all peer ratings except one—emotional maturity. Group 5 CMT scores were significantly related to only one peer rating, as already mentioned.
5. SDT scores were significantly related to 10 of the 13 peer ratings (all but emotional maturity, cooperation with others, and tact) for group 2. Only a few significant correlations were found for groups 4 and 5.

COMMENTS

A better choice of the success criterion should have been made. Although there were 21 levels of possible advancement, the employees (especially in groups 3, 4, and 5) were already approaching the top levels, which decreased their mobility. No control group was provided as a basis for comparison on the success criterion; thus, the answer to the question posed in this study is not a clear "yes" or "no," but an ambiguous "no." It is ambiguous because of the criterion problem.

SELF-PERCEPTION

80.

Perceived Parental Attitudes and Parental Identification

Brunkan, R. J. (1965)

What is the relationship between possible and fantasy vocational choices and identification with a parental ideal?

POPULATION AND SAMPLE

The sample consisted of 289 sophomore, junior, and senior undergraduate males enrolled in psychology courses at the University of Iowa. Only those students who had lived with their father or stepfather until the age of 14 years or beyond were included in the study. The mean age of the students was 20.39 years.

INSTRUMENTATION AND DATA

The Semantic Differential (SD) was used to assess the degree of parental identification, based on the difference between the student's rating of self and his rating of father, mother, ideal father, and ideal mother.

The Family Relations Inventory (FRI) developed by Brunkan and Crites was used to measure perceived parental attitudes. The FRI contains 202 items representing six scales: father concentration, father acceptance, father avoidance, mother concentration, mother acceptance, and mother avoidance.

Trow's Vocational Choice Inventory (VCI) was used to determine the student's stated probable vocational choice, possible vocational choices, fantasy choice, or indecision. The choices were then classified into one of eight field categories using Roe's occupational classifications, or into an undecided category.

DESIGN AND ANALYSIS

The instruments were admininstered to all students during the 1962-63 academic year.

Perceived parental attitude scores were changed to T scores ($M = 50$ and $SD = 10$). Since primary interests affected the interactions between parental attitudes and choice problems, analysis of variance was used. The .05 level of significance was accepted for the study.

Three hypotheses were tested:

Hypothesis 1—"For (1) probable, (2) possible, and (3) fantasy choices, degree of parental identification differs for the various vocational choice fields; these differences depend upon which parent is being rated and/or upon whether the real or ideal parent is being rated.

Hypothesis 2—"For probable vocational choices, (1) choices in the service, general cultural, and arts entertainment fields are accompanied by a high degree of parental concentration, (2) choices in technological occupations are accompanied by a high degree of parental acceptance, and (3) choices of scientific careers are accompanied by a high degree of parental avoidance."

Hypothesis 3—"For (1) probable, (2) possible, and (3) fantasy choices, perceived parental attitude scores differ for the various vocational choice fields, these differences depending upon which parent is being rated and/or upon which attitude is being considered."

RESULTS AND DISCUSSION

1. The results of analysis for each type of choice (probable, possible, fantasy) indicated that the degree of identification is the same for the occupational choice sub-groups across any combination of father/mother and real/ideal parents. Hypothesis 1 was rejected.
2. Analysis of variance revealed no significant interactions between field of occupational choice and perceived parental attitude. Hypothesis 2 was rejected.

3. Analysis of variance indicated that only one significant relationship existed between type and field of vocational choice and perceived parental attitudes. Hypothesis 3 was rejected.

COMMENTS

The results suggest that the two main variables studied—perceived parental attitudes and parental identification—do not influence vocational choice. The strength with which this statement can be made is mitigated by the nature of the sample and the nature of the specific measures used.

81.

Self-Esteem, Defense Positive, and Perceptual Accuracy in Vocational Choice

Foreman, M. E. (1968)

Can a distinction be made between types of self-esteem and their relationship to vocational choice?

POPULATION AND SAMPLE

Included in the sample were 41 male college students who were engaged in vocational counseling at the University of Cincinnati Counseling Service. (No further description of the sample was given in the report of the study.)

INSTRUMENTATION AND DATA

The students were administered a basic test battery, which included: Edwards Personal Preference Schedule (EPPS); Strong Vocational Interest Blank (SVIB); Kuder Preference Record, Vocational Form C (Kuder-C); Tennessee Self-Concept scale (TSC); and a series of vocational self-assessment forms.

The TSC consists of two parts—a P scale which measures self-esteem and a DP scale which measures defense positive. Self-esteem is defined as being "based on feelings of self-satisfaction associated with one's experimental background. . ." Defense positive is "self-esteem which attempts to ward off self-depreciating feelings by making unrealistically high self-appraisals based on success achieved through fantasy." The TSC acknowledges that its two scales are overlapping.

"The vocational self-assessment forms consisted of three five-interval scales on which subjects estimated their measured needs on the EPPS, Kuder-C, and SVIB. In addition S's (sic), were asked to indicate the occupation they expected to enter, their level of commitment to the occupation, and to specify three EPPS need scales, two Kuder-C interest areas, and two SVIB occupational families which were *most* and *least* important to development within their selected occupations."

DESIGN AND ANALYSIS

"The P scale (self-esteem) and the DP scale (defense positive) of the Tennessee Self-Concept scale constituted the independent variables."

"The magnitude and direction of differences between estimated and measured scores on the three instruments for the scales nominated as areas of high, intermediate, and low vocational identity constituted the dependent variables."

"The accuracy of client self-percepts without regard to self-esteem or defense positive was assessed by placing each Ss' estimated and measured scores on nine 5x5 matrices, one matrix for each level of vocational identity for each of the three instruments. The matrices were analyzed following the information theory approach as outlined by Attneave (1959)."

Chi-square was applied to test for significance.

RESULTS AND DISCUSSION

1. Measured and estimated needs were not independent of each other. It was found that, "the S's (sic) in general were able to estimate their measured scores with moderate to high accuracy regardless of whether their needs and interests were of low, intermediate, or high vocational identity." Furthermore, "The relationships between measured and estimated scores are particularly high for SVIB occupations of low and high vocational identity."

2. ". . .when self-esteem and defense positive feature of S's (sic) are considered, they tend to be associated with over estimation of interests on the Kuder-C in areas of high vocational identity."

3. "Self-esteem and defense positive were not systematically related to differences between perceived and estimated needs on the EPPS, or generally related to differences in areas of low or intermediate vocational identity."

". . .self-esteem and defense positive as measured by the Tennessee Self-Concept scale show little, if any, independence in their relationships with differences between perceived and measured needs and interests at all levels of vocational identity. The TSC, then, has not resolved the traditional problem of isolating self-esteem from defensive self-esteem."

COMMENTS

Since the authors were aware of considerable overlapping between the two subscales of the TSC before the use of the instrument in this study, it was unlikely to expect that the two sub-scales would show different patterns of relationship with vocational choice. Work on the TSC to tighten the measurement of the two constructs might profitably have preceded this study.

82.

Self-Ideal Congruence Among Engineering Managers

Hay, J. E. (1966)

What is the relationship between measures of personality, job performance, and position level, and self-ideal congruence among managers?

POPULATION AND SAMPLE

The sample consisted of 62 engineering managers from three oil refineries. Four levels of managers were included. They ranged from general foreman to refinery manager. Sixty-nine percent of the sample had a college degree, or some college training; 84% of the college graduates had engineering degrees. (No explanation of sampling techniques was provided in the report of the study.)

INSTRUMENTATION AND DATA

Q sorts were used to determine the relationship between self and ideal job perceptions.

The instruments included: Leadership Opinion Questionnaire, Myers Briggs Type Indicator, Sixteen Personality Factor Questionnaire, and the Survey of Interpersonal Values. (The psychometric indices for the instruments were not indicated in the report of the study.)

DESIGN AND ANALYSIS

Fifteen representative managers from the sample were interviewed to develop the Q-sort statements. Out of 200 statements made by the subgroup concerning characteristics of managers, 4 judges selected 50 statements based on 10 basic dimensions of management jobs developed by Hemphill. The Q-sort deck in this study consisted of 5 statements for each of the 10 dimensions, based on highest percentage of interjudge agreement (test-retest reliability .72, significant at the .01 level).

Managers were asked to sort the statements into seven columns to describe what they were like in their jobs. One week later, they were asked to return and sort the statements to describe what they desired to be like in their jobs.

"Ratings on 19 key behaviors from the Q-sort deck were made by supervisory managers." These ratings were from 1 to 5, with 1 representing the lowest rating. Subordinates at equal levels were grouped and rated together. Two ratings were obtained for each manager in all but eight cases. Chi-square analysis indicated that supervisors were consistent in rating their subordinates.

Scores from 1 to 7 were assigned to each Q-sort statement, according to the column in which they were placed. The higher the score, the more descriptive the statement. Scores from the two sorts (self and ideal) were correlated using an adaptation of the Pearson product-moment correlation coefficient. Correlations were changed to Fisher Z scores. A congruence score was obtained by comparing the amount of similarity between self and ideal job perception. Z scores were correlated with supervisor ratings of performance and psychological tests. A single classification analysis of variance design was established to determine the relationship of the variables to job level. Four columns were established to represent a job level in the management hierarchy. Managers were classified into these columns for each of the variables studied.

RESULTS AND DISCUSSION

"It was hypothesized that higher level managers would be more congruent and that managers judged more effective would be higher in congruence than those judged less effective."

1. Three variables were significantly correlated with self-ideal congruence: management effectiveness, introversion, and the intellectual scale of the Sixteen Personality Factor Test.

2. The correlation of variables and job success revealed that more successful managers: (a) did not value conformity, (b) had lower need for closure, (c) were open to new experiences, (d) tended not to make quick decisions, (e) thought more in abstract terms, and (f) relied on intuition.

3. The correlation of variables and job level revealed only one significant personality trait (the author did not list the trait, but explained it could have occurred by chance).

COMMENTS

Congruence between self and ideal image seems to be related to over-all effectiveness in a managerial position.

Another approach to the question of congruence between perceived and ideal managerial image would be to measure the responses of others, in addition to the self-reports of actual and ideal behaviors as perceived by the managers.

83.

Self and Other Semantic Concepts in Relation to Choice of a Vocation

Hunt, R. A. (1967)

Are complex decisions, such as choice of vocation, systematically related to self-concepts?

POPULATION AND SAMPLE

The sample included four vocational criterion groups of men who had completed their academic training and were engaged in full-time professional occupations. The four occupations were: minister (N=66), engineer (N=65), manager (N=69), and teacher (N=58). (No explanation of how the individuals were selected was provided in the report of the study.)

A validation group of 151 undergraduate students enrolled at Texas Christian University was also included in the study.

INSTRUMENTATION AND DATA

Concept similarity was measured using the semantic differential technique. ". . .Osgood's D score was changed to a normalized convergence (C) score." In the scoring system, a higher score indicated greater congruence, or similarity, between a pair of concepts. The semantic differential instrument consisted of 16 concepts which were worded to make them appropriate to all participants. The 16 concepts were arranged in random order within four clusters: (a) self-concepts 1-4, (b) significant person concepts 5-9, (c) vocational concepts 10-13, and (d) individualized concepts 14-16.

There were 135 possible scales. The scales were composed of adjectives or adjective phrases, either constructed specifically for this study or drawn from previous research. From a pilot study involving 89 students enrolled in an introductory psychology course, 25 scales which showed the greatest variability and differentiation between the vocational concepts were selected and used in this study.

The 151 students in the validation group were given the semantic differential, and the Kuder Occupational Interest Inventory (OII), Form D.

DESIGN AND ANALYSIS

Two hypotheses were tested:

Hypothesis 1—"The relationship between the self-concept and other semantic concepts will be differentially related to vocational choice."

Hypothesis 2—"The vocational interests of individuals can be predicted from the interrelationships between their self-concepts and other concepts."

Analysis of the data for Hypothesis 1 involved a univariate analysis of variance across the criterion groups on each of the pairs of concept comparisons. In addition, a multiple discriminant analysis of differences between the four criterion groups was performed. The C scores for 40 pairs of concepts selected from a 16x16 matrix of concept comparisons were used as the variables in the analysis.

On the basis of the multiple-discriminant analysis of the criterion groups, a classification analysis of the students in the validation group was made for Hypothesis 2.

RESULTS AND DISCUSSION

1. The C scores were found to discriminate better between groups by eliminating variability due to means and standard deviations.

2. Within each of the four groups, there were significant differences (.01) between the C scores for the acting self-concept, as compared with each of the four vocational concepts. In each case the highest congruency score was for the acting self-concept. This presents a stable and predictable pattern.

3. The same pattern of congruence scores appeared between the four vocational concepts, as compared with the concepts of outer-self, inner-self, ideal-self, influential person, and people in my vocational group (all were concepts of the semantic differential).

4. Each of the four self-concept concepts (1-4) was compared, within each of the four criterion groups, with the concepts of father, mother, and persons within and outside of the individual's vocation (concepts 5, 6, 14, and 15, respectively). No significant differences appeared.

5. "The interrelationships between concepts for each of the criterion groups provides clear differentiation between these four occupational groups." Chi-square analysis was significant at the .001 level. Hypothesis 1 was accepted.

6. A classification analysis was performed on the validation group. This analysis placed each student in the Kuder occupational group for which his probability (Kuder Differential ratio) of group membership was highest. Of 139 usable classifications, 70 were correct hits, indicating that "statistically dependent prediction of interest and probable choice of vocation is possible on the basis of the interrelationship between the semantic differential concepts." Hypothesis 2 was accepted.

COMMENTS

The use of self-ratings as a semantic differential (SD) to predict vocational choice appears hopeful. There should be further studies using this technique, but predicting other vocations. Possibly, further refinements of the technique (for example, further development and empirical selection of SD scales) would lead to a higher percent of hits (50% leaves a lot of room for error).

84.

Self-Esteem Variable in Vocational Choice

Korman, A. K. (1966) Study A

Do high self-esteem individuals implement self more than low-esteem individuals when making an occupational choice?

POPULATION AND SAMPLE

The sample included 137 male, junior and senior college students selected from the upper-division at schools of business administration at two large western universities. The sample was divided into 16 groups, based on high and low self-esteem and occupational choice. The size of the various groups ranged from 9 to 31. (The report of the study provided no description of the sampling techniques.)

INSTRUMENTATION AND DATA

A three-part questionnaire was used to investigate occupational choice of each student. The first part of the questionnaire asked the student if he was interested in a career in business. If the answer was yes, part two asked if an area of specialty had been selected. The third part of the questionnaire was designed as a control. The students were asked if they had received any professional counseling in making their decision. Anyone who had received such assistance was excluded from the study. In a test-retest reliability check over a six-week period, 96% of a 47-student subsample were classified in the same manner for the two universities.

To measure self-esteem, the self-assurance scale of the Ghiselli Self-Description Inventory was used. The top one-third on the Ghiselli were called high self-esteem, and the bottom two-thirds were called low self-esteem.

Initiative was measured using the scale of the same name on the Ghiselli Self-Description Inventory.

Other measures included the Interaction-Orientation scale of the Boss Orientation Inventory, and the Need for Job-Freedom scale of the Crites Vocation Reaction Survey.

DESIGN AND ANALYSIS

The study was designed to test two sets of hypotheses:

"Hypothesis 1A—For individuals high in self-esteem, those who have chosen a sales career should have a greater degree of 'interaction-orientation' than those choosing an accounting career."

"Hypothesis 1B—For individuals high in self-esteem, those who have chosen a sales career should have a greater degree of 'interaction-orientation' than those choosing a career in production management."

"Hypothesis 1C—For individuals low in self-esteem, there should be no difference in 'interaction-orientation' between those choosing sales careers and those choosing accounting careers."

"Hypothesis 1D—For individuals low in self-esteem, there should be no difference in 'interaction-orientation' between those choosing sales careers and those choosing careers in production management."

"Hypothesis 2A—For individuals high in self-esteem, those choosing sales occupations will tend to perceive themselves in a manner which is descriptive of the individual with a high degree of 'initiative', while those entering the accounting field will tend to perceive themselves in a manner which is descriptive of the individual who is low on 'initiative'."

"Hypothesis 2B—For individuals low in self-esteem, there will be no differences between those choosing sales occupations and those choosing the accounting field insofar as their self-perceptions are descriptive of degree of 'initiative'. "

"Hypothesis 2C—For individuals high in self-esteem, those choosing sales occupations will describe themselves as having a greater need for 'Job Freedom' than those choosing the accounting area."

"Hypothesis 2D—For individuals low in self-esteem, there will be no differences between those choosing sales occupations and those choosing sales occupations and those choosing accounting in terms of their self-perceived need for 'Job Freedom'. "

Two subject groups were designed to study each of the eight hypotheses. The mean scores for initiative and interaction-orientation were compared for the groups involved with the appropriate hypothesis. One-tailed *t* tests of significance were used to judge the significance of the differences between such means.

RESULTS AND DISCUSSION

1. The four hypotheses involving comparisons of high-esteem groups (1A, 1B, 2A, and 2C) showed significant differences in the direction predicted (.05 level for 1A, 1B, and .01 for 2A and 2C).
2. The four hypotheses involving low-esteem groups showed no significant differences.

COMMENTS

The main limiting factor in this study was the cell size for investigation of hypotheses 1A, 1B, and 2C. These findings were based on samples of 9 and 10. The use of a one-tailed test of significance (although proper) did lower the value needed for significance.

85.

Self-Esteem Variable in Vocational Choice

Korman, A. K. (1966) Study B

The results of Study A by Korman (under the same title as this study) were consistent with the proposed theoretical framework, wherein people of high self-esteem seek to implement self when making occupational choices more so than do people with low self-esteem. This study asks the question: were these results due to the process proposed or were they just a different occupational perception by the subjects involved?

POPULATION AND SAMPLE

Three separate samples were included in this study. Sample 1 consisted of 37 school of business administration students at a far western state university. Sample 2 contained 39 lower-division students from a far western state college. Sample 3 included 26 upper-division students from a large mid-Atlantic state university. Samples 1 and 2 were all male, and Sample 3 contained seven female subjects. (The report of the study provided no description of the sampling techniques.)

INSTRUMENTATION AND DATA

The instruments used included an occupational choice questionnaire (described briefly in Study A), and the Ghiselli Self-Description Inventory (measure of self-esteem). Both were administered to all three samples. In addition, Samples 1 and 3 were administered the Crites Vocational Reaction Survey twice; once under instructions to describe the degree to which each of seven occupational needs was typical of themselves, and once to describe the needs in terms of their chosen occupation. The seven needs were: material security, job freedom, structure, system, personal status, behavior control, and social service. Sample 2 was administered the Minnesota Importance Questionnaire under similar instructions. The Minnesota Importance Questionnaire is a Likert-type rating scale of 20 vocationally relevant individual needs, such as responsibility, recognition, security, and others.

DESIGN AND ANALYSIS

A total high and low need score was computed for each student in Samples 1 and 2, using the two most important and two least important items on the Crites Vocational Reaction Survey. The same procedure was repeated for the rating of the typical needs, in relation to their chosen occupation (expected satisfaction score). The discrepancy score was computed by subtracting the expected satisfaction score and need scores from each other.

A similar procedure was followed for Sample 2, using the top and bottom four needs on the Minnesota Importance Questionnaire.

Two hypotheses were tested: "Hypothesis 1—For highly important needs, the probability that the chosen occupation would satisfy these needs would be greater for those with high self-esteem than for those with low self-esteem.

Hypothesis 2—For unimportant needs, the probability that the chosen occupation would satisfy these needs would be the same for those with high self-esteem and those with low self-esteem."

Students were divided into high and low self-esteem groups, based on scores on the Ghiselli Self-Description Inventory. (Although it was not specified in the report of the study, it was assumed that the same one-third, two-thirds split between high and low self-esteem was also used in this study.)

Mean discrepancy scores between self-perceived needs and expected satisfaction scores were computed for high and low self-esteem students in each of the three samples. The mean discrepancy scores were tested for significant differences using a one-tailed *t* test. This procedure was followed for important needs and unimportant needs. The significance level was set at .05.

RESULTS AND DISCUSSION

1. The results indicate "that all hypothesis are supported as predicted for all samples. For important needs, the expectancy of satisfaction in the chosen occupation is significantly greater for those with high self-esteem than for those with low self-

esteem. The difference does not appear for those needs which are self-perceived as unimportant."

2. The value of *t* ranged from 1.80 to 1.96.

COMMENTS

By the use of a one-tailed test of significance, the results were found to be significant at the .05 level. Without further description of the sample and sampling techniques, it is difficult to know how much confidence can be placed in these results.

The finding that people with high self-esteem are more likely to choose professions which will satisfy their important needs does add a further dimension to the description of such people. However, its usefulness is not clear.

86.

Self-Esteem as a Moderator of the Relationship Between Self-Perceived Abilities and Vocational Choice

Korman, A. K. (1967)

Do high self-esteem students choose occupations which they perceive to require high abilities more often than do those students with low self-esteem?

POPULATION AND SAMPLE

The sample included 126 lower-division students at a large, eastern private university. All expressed a definite occupational choice. There were 70 male and 56 female students.

INSTRUMENTATION AND DATA

The self-assurance scale of the Ghiselli Self-Description Inventory was used to measure self-esteem.

Self-perceived abilities were measured using the Ability-Assessment Questionnaire. This instrument measured the extent to which the student felt he possessed various abilities such as: perceive objects in space and relate them to one another, work quickly with numbers, produce a large number of ideas in a short period of time. A three-week, test-retest, item-reliability check had a median of .81.

Occupationally required abilities as perceived by the student were measured using the Career Description Questionnaire.

Vocational choice was measured by a questionnaire procedure found to have high concurrent validity and reliability in the previous study (Korman 1966).

DESIGN AND ANALYSIS

The questionnaires were administered during regularly scheduled class meetings of introductory psychology classes. In most cases, two sessions (separated by about two weeks) were required to complete the testing.

The male and female groups were analyzed separately. The students were divided into high and low self-esteem groups, based on methods of previous research which placed approximately one-third of the individuals in the high esteem groups and the remaining two-thirds in the low esteem groups.

"Discrepancy scores were computed between the two highest occupationally required abilities and their corresponding self-perceptions, and the two lowest occupationally required abilities and the corresponding self-perceptions."

Two hypotheses were tested:

Hypothesis 1—"Individuals with high self-esteem are more likely to see themselves as having high abilities in those areas where their chosen occupation calls for high abilities than are those of low self-esteem likely to see themselves as having high abilities in those areas where their chosen occupation calls for high abilities."

Hypothesis 2—"For those areas where the chosen occupation is perceived to call for low abilities, the individual with low self-esteem is as likely to see himself as having high abilities as is the person with high self-esteem."

The second hypothesis was designed as a control on the results of the first. If Hypothesis 2 was supported, it would suggest that the high self-esteem individual does not describe himself as more adequate in everything, but only in those areas called for by the role he assumes.

A random sample of 53 cases was taken from the over-all sample to determine if there was a systematic tendency for the low self-esteem individuals to see themselves as low in self-perceived ability, with respect to occupational requirements when compared with high self-esteem individuals.

RESULTS AND DISCUSSION

1. The results indicated that high self-esteem individuals had significantly lower discrepancy scores (.01 for males and .05 for females) than did those with low self-esteem. This indicates that high self-esteem individuals saw themselves as being more likely to meet the ability requirements of their chosen occupation than did the low self-esteem individuals. Hypothesis 1 was accepted.

2. Results showed no systematic differential tendency for the low esteem individual to see himself as low in perceived ability when matched against high self-esteem individuals. Hypothesis 2 was accepted.

3. The results indicated that a person who thinks of himself as being adequate is more likely to end up in situations where he thinks he will be adequate.

4. The results suggest that the individual with low self-esteem will accept situations where he does not think he will be adequate, and where he will tend not to be adequate; therefore, these situations contribute even more to his low self-esteem.

COMMENTS

It is tempting to generalize the results of this study to other individuals. However, it is not possible to adequately estimate the extent to which these results can be generalized. Students at a private university may differ in both ability and self-perception from other students.

87.

A Self-Concept Approach to Predicting Occupational Preferences

Oppenheimer, E. A. (1965)

What is the relationship between self-concept and occupational choice?

POPULATION AND SAMPLE

"The sample consisted of 81 male liberal-arts students at Rutgers University. The Ss were distributed relatively evenly among the first three undergraduate classes."

INSTRUMENTATION AND DATA

Occupational preference was measured by allowing the students to rank 50 occupations on a 7-point scale. High ranking indicated possible interest in the occupation, and low ranking indicated less, or no interest. One occupation was selected by the student from each of the seven points on the scale, and the seven occupations were then designated as the "expressed occupational hierarchy."

The Modified Repertory Test (MRT) was used to measure self-concept. "The MRT is a semistructured test that allows the S to use his system of personal constructs to rate self- and occupational concepts."

A measure of predicted preference hierarchy was obtained from the student's ratings of nine items on a 7-point continuum. The nine items were: "I am," "I would like to be," and the seven occupations in the expressed preference hierarchy. The predicted preference hierarchy was a rank order of the sum difference scores between ratings of "I am," and each of the seven occupations. (Test-retest reliability of the predicted preference hierarchy over two- and three-week periods was reported as .80 and .79, using Spearman's rho.)

DESIGN AND ANALYSIS

Spearman-rho coefficients of correlation were computed between expressed and predicted preference hierarchy.

There were two hypotheses tested:

Hypothesis 1—"People prefer occupations perceived as congruent with their self-concepts."

Hypothesis 2—"Self-esteem is positively related to the degree of agreement between self-concepts and occupational preferences." Self-esteem was measured by actual-ideal self-concept discrepancy. Student's self-ratings and ideal self-ratings (MRT) were compared. The students were rank ordered from smallest to largest actual-ideal self discrepancy, and from highest to lowest rho correlation between predicted and expressed preference hierarchy. Spearman rho was computed for this correlation.

RESULTS AND DISCUSSION

1. Similar ratings between self and preferred occupations were shown by 60 students; 9 were more similar to non-preferred occupations, and 12 were tied. These results were significant at the .001 level ($Z=4.5$).
2. A significant rho of .33 (significant at the .01 level) was found between the measure of self-esteem and agreement between expressed and predicted preference hierarchies.
3. Both hypotheses were accepted.

COMMENTS

No explanation of sampling techniques was given in the report of the study. When the same rater (in this case, the student) has control over the criterion and variables, the results are suspect because of rater biases.

There may be some problems with comparing ratings on two different scales and then judging their similarity or dissimilarity.

While the correlation coefficient interpreted as supporting the second hypothesis is statistically significant (rho$=.33$, $p<.01$), the common variance accounted for was approximately 10%. The demonstration of a stronger relationship between these two variables would certainly be desirable before ascribing much importance to this finding.

88.

Certain Self-Constructs And Occupational Preferences

Oppenheimer, E. A. (1966)

What is the nature of the relationship between self-concepts and occupational preferences?

POPULATION AND SAMPLE

The sample consisted of 81 male, liberal arts students at Rutgers University. The sample was selected from the students who had registered for part-time employment at the Student Aid Office. Each student was offered three dollars for participation in a study designed to develop a new technique for career counseling. The sample limit was set at the first 90 students to apply. The applicants included 20 freshmen, 30 sophomores, and 27 juniors. (Though not stated in the report of the study, it may be assumed that the remaining four students were seniors.)

INSTRUMENTATION AND DATA

The instruments used in this study were the Occupational Preference Ranking and the Modified Repertory Test (MRT). The Occupational Preference Ranking was a two-part instrument "designed to elicit an expressed occupational heirarchy of seven occupations which represent a continuum from the occupation the subject would most like to enter to the occupation he would least like to work in." (48-hour test-retest reliability, rho—.93).

"The MRT is a semi-structured test that allows the subject to use his own system of personal constructs to rate self and occupational concepts." The instrument combines the first part of the Kelly Role Construct Repertory Test (KRCRT) with a modified semantic differential. Test-retest reliability of the MRT over two- and three-week periods was acceptable (rho$=.79$).

DESIGN AND ANALYSIS

Three hypotheses were tested:

Hypothesis 1—People prefer occupations perceived as congruent with their self-concepts.

Hypothesis 2— Self-esteem is positively related to the degree of agreement between self-concepts and occupational preferences.

Hypothesis 3—Cognitive complexity (the personal constructs available to a person to construe the behavior of others) is positively related to the degree of similarity between self-concepts and occupational preferences.

Hypothesis 1 was tested by summing the differences between the student's self-ratings and his ratings on each of four occupation preferences (those occupations ranked 1, 2, 6, and 7 using the MRT). The summed difference score for each preferred occupation (1 and 2 in rank) was compared to the summed difference score for each of the non-preferred occupations (6 and 7 in rank). The analysis involved four sets of comparisons between preferred and non-preferred occupations for each student.

Hypothesis 2 was tested using the discrepancy between actual and ideal self-concept as the measure of self-esteem. Agreement between actual self-concept and occupational preference was measured by the rank-order correlation between predicted and expressed preference hierarchies. (Predicted rank-order preference was determined by rating the phrase, "I am" in connection with the seven expressed preferences.)

Hypothesis 3 was tested by comparing the students rated as cognitively complex (determined by the number of independent construct dimensions produced on the MRT) with those rated cognitively simple, in terms of the degree of agreement between self-concept and occupational preference.

RESULTS AND DISCUSSION

1. Hypothesis 1 was accepted. Of the students, 60 rated themselves more similar to their preferred occupations; 9 rated themselves more similar to their non-preferred occupations; and 12 tied (significant at the .001 level).
2. Hypothesis 2 was accepted. Self-esteem was positively related to the degree of similarity between actual and ideal self-concepts, and occupational preference. (The relationship was not linear, and the Mann-Whitney U test was used.)
3. Hypothesis 3 was rejected. No significant relationship was found between cognitive complexity and the degree of similarity between self-concepts and occupational preferences.
4. The lack of relationship between cognitive complexity and the measure of similarity between expressed and predicted preference hierarchies suggests that cognitive complexity is not a promising construct for identifying individual differences related to occupational preferences.

COMMENTS

Acceptance of Hypotheses 1 and 2 support the results of other studies that students' self-ratings tend to agree with their ratings of desirable occupations. The utilitarian or theoretical value of this finding does not appear to be clearly demonstrated.

The terms, self-concepts, occupational concepts, etc. are used in this description to designate scores arrived at by a specific (and not necessarily widely accepted or defensible) process. It appears that they need to be spelled out more fully and forcibly so that their meaning is clearer.

89.

Relationship Among Self-Concepts, Ideal-Self-Concepts, and Stereotypes of Probable and Ideal Vocational Choices

Wheeler, C. L. and Carnes, E. F. (1968)

Is the occupational choice of a person really an attempt to implement his self-concept?

POPULATION AND SAMPLE

Two samples were used in this study. One sample consisted of 74 freshmen enrolled in an introductory psychology class at Fresno State College. The second sample included 60 freshmen and sophomores taking health education and orientation classes at Fresno City College.

INSTRUMENTATION AND DATA

The instrument used was a modified form of the Descriptive Check List (DCL) developed by Blocher. "The Spearman-Brown corrected split-half reliability obtained for the modified DCL was .96."

The modification of the DCL (MDCL) consisted of the application of a 5-point rating scale to each of 180 items. These items were designed to measure self-concept, ideal-self-concept, and stereotype of probable and ideal vocational choices.

The students were tested in groups of 3 to 11 members each. Each student participated in two testing sessions, one week apart. During the first testing session, they were asked for a statement of their probable vocational choice, the degree of certainty of their probable vocational choice, and their ideal vocational choice. The MDCL was administered first to measure self-concept, and then to measure ideal-self-concept.

Thus, each student: (1) took the MDCL to indicate their self-concept, (2) responded with statements of their probable vocational choice, their degree of certainty of probable vocational choice, and their ideal vocational choice, and (3) took the MDCL to indicate their ideal-self-concept. The three statements concerning probable choices were used as interpolators between self-concept and ideal-self-concept.

At the second testing session, the students were given the MDCL forms on which their probable and ideal vocational choices had been listed. They were asked to list the characteristics of a person in those occupations.

DESIGN AND ANALYSIS

"The research design called for an assessment of the difference between self-concept and occupational stereotype concept profiles of a 180-item instrument."

Two hypotheses were tested. Hypothesis 1—The congruency between self-concept and occupational stereotype of probable occupation will be significantly greater than congruency between self-concept and occupational stereotype of ideal occupation.

Hypothesis 2—The congruency between ideal-self-concept and occupational stereotype of ideal occupation will be significantly greater than the congruency between ideal-self-concept and occupational stereotype of probable occupation.

Four difference (or congruency) scores were obtained for each student: (a) self-concept/stereotype ideal occupation, (b) self-concept/stereotype probable occupation, (c) ideal-self-concept/stereotype ideal occupation, and (d) ideal-self-concept/stereotype probable occupation.

Mean difference (or congruency) scores were obtained for each sample, on each of the four measures. "The D^2 statistic discussed by Cronbach and Glaser (1953) was used." (The higher the D^2, the higher the difference and the lower the congruency.)

RESULTS AND DISCUSSION

1. There was a significant difference between the means of the self-concept/stereotype probable occupation measure, and the self-concept/stereotype ideal occupation measure, in the direction hypothesized. Hypothesis 1 was accepted.

2. There was a significant difference in the direction opposite to that forecast in Hypothesis 2. There was more congruency between ideal-self-concept and stereotype probable occupation, than between ideal-self-concept and stereotype ideal occupation. Hypothesis 2 was rejected.

3. The results suggested that students visualized their ideal self and typical people, in both probable and ideal occupation, as being quite congruent, and yet quite different from their present self-concept. The pesent self-concept was most like the stereotype of probable occupation, which supported the theory that occupational choice is an effort to implement the self-concept.

COMMENTS

The design of the study is adequate for the purposes of the study. The results indicate that the students set goals for themselves which tend to be in harmony with their self-concept. In addition, the ideal-self-concept tends to be in harmony with the perceived requirements of their probable occupation. Thus, a consistent system of vocational goals, and self-concept and ideal-self-concept, appears to exist. The discrepancy between the pattern of relationships with the probable vocational choice and the ideal vocational choice suggests the possibility that perceptions of self are more affected by those goals which are closer and/or more attainable, than by more desirable goals of a less attainable nature.

BACKGROUND

90.

Life-History Correlates of Selected Vocational Interests

Fair, D. C. (1965)

Do males with well-developed interests in the occupations of chemist, public administrator, and life insurance salesman have significantly different life histories?

POPULATION AND SAMPLE

A questionnaire was sent to 1,193 male freshmen and sophomores at the University of Minnesota. Each had completed the Strong Vocational Interest Blank (SVIB) during orientation in the fall of 1962 or 1963 and had obtained an "A" rating on only one of three scales: chemist (N=414), public administrator (N=447), and insurance salesman (N=332). A total of 880 (73.9%) of the questionnaires was returned. (The exact sample size for each occupation was not provided in the report of the study.)

INSTRUMENTATION AND DATA

A 147-item, life-history questionnaire was used to gather the data.

DESIGN AND ANALYSIS

The respondents from each occupational group were assigned at random to validation and cross-validation groups.

An item analysis was conducted on the responses of the validation groups. Life-history keys were developed for comparisons between the occupational groups using unit weights. Each validation and cross-validation group was then scored using the life-history keys comparing them to the other two occupations.

"Means, standard deviations, and percentages of overlap were calculated for each of the pairs of distributions of life-history scores for both the validation and the cross-validation groups."

RESULTS AND DISCUSSION

There were 40% and 42% overlaps on the chemist and life insurance salesman validation and cross-validation groups, respectively, using the corresponding life-history key.

"These results show that satisfactory discrimination between the life histories of the three validation groups was obtained, and that the results held up well on cross-validation."

COMMENTS

The conclusion that people who score differently on the SVIB also have different life histories does not seem particularly surprising or important.

91.

Career Choices of Successful Business Executives

Hubbard, H. G. (1965)

What are some of the background factors that relate to the career choice of successful business executives?

POPULATION AND SAMPLE

The sample included 102 vice presidents employed by Los Angeles area manufacturing companies with annual gross earnings of $25-$50 million. (The technique used to identify and select the vice presidents was not described in the report of the study.)

INSTRUMENTATION AND DATA

A specially constructed questionnaire (100 items) was designed to investigate career decisions about management. The questionnaire sought information concerning time of decision, personal influences on decision, socioeconomic background and mobility, personal values influencing decision, and important career goals. (Information on the reliability and validity of the instrument was not provided in the report of the study.)

DESIGN AND ANALYSIS

The vice presidents were divided equally into three groups, according to their responsibilities: Group 1 (technically trained), Group 2 (staff functions), and Group 3 (broad range of managerial responsibilities). The questionnaires were evaluated and responses tabulated.

RESULTS AND DISCUSSION

1. Time of decision—50% made their decision after completing college, 25% decided during college, and 25% decided before college. Business career decisions, in general, were made later than professional career decisions.

2. Personal influences on decision—personal influence was the most important generalized influence on the decision to enter business management.

3. Socioeconomic background and mobility—when compared to occupations of their fathers, a greater number of executives displayed horizontal or downward mobility, as opposed to upward mobility; i.e., fathers were generally professional people.

4. Personal values influencing decision—important values that influenced choice were direction and motivation of others, and involvement in challenging situations that demand personal skill and ability.

5. Important career goals—high income ranked second to personal development and self-improvement.

One general conclusion was reached—business executives tend to desire or need adventure by creating situations that call for calculated risks.

COMMENTS

The results would probably only apply to highly successful business executives, since the sample was obviously a homogeneous group of very unusual people, in terms of ability and achievements.

The vice presidents were divided into groups according to areas of responsibility, and yet no comparisons were made between the groups. Were there no differences between these groups?

DECISION-MAKING

92.

The College Senior and the Recruitment Interview

Carson, L. (1964)

What are some of the important characteristics of both companies and jobs that influence the career-decision making process of senior engineering students?

POPULATION AND SAMPLE

The sample consisted of 227 engineering seniors who were graduating from Purdue University either in the fall semester 1963 or spring semester 1964. This number represented 71% of all engineering seniors at Purdue, each of whom received a five-page questionnaire concerning the placement interview. The 227 respondents included: 100 chemical engineers, 73 civil engineers, and 54 mechanical engineers. A survey of plans after graduation indicated that about 50% of the students in all three areas (chemical, mechanical, and civil engineering) were planning to attend graduate school. It was assumed that the other 50% would be available for employment immediately after graduation.

INSTRUMENTATION AND DATA

The instrument used in the study was a questionnaire designed in cooperation with Employees Relations Research Department of Standard Oil Company, the faculty and student members of the Occupational Research Center at Purdue University, and the manager of engineering and technical service administration for American Oil Company. The short, five-page questionnaire attempted to measure the student's attitudes toward factors which might contribute to his decision to sign up for the placement interview with a specific company. Some of these factors were: the company's reputation, opinions of other students, and company advertising.

The questionnaire also asked the students to rate their degree of familiarity with specific companies. Another part of the questionnaire was a rating scale for five major companies (American Oil, General Motors, Procter and Gamble, Shell Oil, and U. S. Steel). The students were asked to rate these 5 companies on 13 criteria: salary potential, long-range benefits, company characteristics, opportunity for promotion, and others. The rating employed a 5-point scale (5 represented a very good rating).

DESIGN AND ANALYSIS

The responses were tabulated and results expressed in terms of totals and percentages of students making general types of responses. A factor analysis was conducted on the 16 occupational characteristics together with the number of interviews completed, and on the company size preferred for employment.

RESULTS AND DISCUSSION

1. The data showed a significant relationship between a company's willingness or ability to provide summer employment for engineering students and the amount of interest expressed by the students in seeking permanent employment with that company.

2. The three engineering groups showed a high degree of agreement about which factors influenced their decisions to interview with specific companies. The most influential factors included: discussion with past graduates, company image, training programs, and job security. The least influential factors were: company advertising in the college newspaper, group meetings conducted by companies, and desire to take interview trips.

3. The mean number of interviews completed in each group was: chemical engineering (3.1), civil engineering (1.8), and mechanical engineering (3.7). The low number of interviews completed by civil engineers was explained by the high percentage who were planning employment with state highway departments.

4. All three engineering groups reported being introduced to more companies through advertising in magazines, professional journals, and newspapers than through any other mass media.

5. Students ranked their degree of familiarity with nine specific companies by comparing each company to the other eight. The companies included: American Oil, Bell Telephone, Dow Chemical, General Motors, Lockheed, Procter and Gamble, Shell Oil, Texaco, U. S. Steel. According to the results, "engineering groups reveal a pattern of familiarity consistent with their training specialties."

6. Most frequently listed by the students as the

company they would most like to interview were Dow Chemical, DuPont, General Motors, Procter and Gamble, and American Oil, in that order.

7. Analysis of occupational characteristics which appealed most to the students showed that their primary motive was to achieve professional satisfactions.

"Integral parts of job content, in addition to the necessity that work be interesting, are opportunities to learn new methods and to engage in some variety of activities. The prospective of training and developing their own methods are highly rated characteristics."

8. Of the companies, 5 of the 9 were rated according to how the student perceived them as possessing 12 characteristics related to job satisfaction. The results failed to show any appreciable differences between the companies. This was not surprising since the five companies were all among the top seven students would most like to interview.

9. The factor analysis revealed 4 factors which together accounted for 91.2% of common variance. The factors were: (1) realization of professional potential (opportunity to learn new methods, work out own methods, manage the work of others, promotions, perform a variety of activities) 33.5%, (2) physical activity (outdoor work, physical activity, move from place to place) 24%, (3) economic security (high salary, long-range benefits, job security) 20.2%, and (4) structure and facilitation (on-the-job training, work as a team, no independent work) 13.5%.

COMMENTS

The author may have over generalized in the interpretation of his data and the reporting of his results. The four factors accounted for about 91% of the common variance, but they included 14 of the total 18 items in the analysis.

In reporting the ratings of the five companies in terms of desirable characteristics as viewed by the students, the author selected five companies most sought after by the students for interviews, and then proceeded to say that they were all quite similar in terms of the characteristics. It would probably have been unusual if they had not all been rated high.

No tests of significance were reported. The analysis of the 16 occupational incentives, perceived by each of the three groups, showed no clear-cut differences that could have been interpreted properly without tests of significance. The author listed several patterns which he observed as existing across the groups. One of these patterns he labeled content of work. One of the items he included in this pattern was opportunity to engage in a variety of work. This item had ratings of 3.4, 3.2, and 3.1 across the three groups. However, other items with ratings of 3.2, 3.2, and 3.2 across the three groups were not considered as being important.

93.

Predicting Organizational Choice: A Post Hoc Analysis

Pieters, G. R., Hundert, A. T., and Beer, M. (1968)

What factors does the individual consider in selecting the organization for which he wants to work? (The usefulness of an Index of Attractiveness in predicting organizational choice.)

POPULATION AND SAMPLE

Following the announcement of their decision, 129 persons who had accepted or rejected job offers extended by the Professional Recruiting Department of Corning Glass Works were mailed questionnaires. Of this total, 44 were acceptors and 85 were rejectors. Returns for both groups were nearly the same (75% and 72%, respectively, for acceptors and rejectors) producing a total sample of 94.

INSTRUMENTATION AND DATA

The data were gathered using an open-ended response questionnaire. The items on the questionnaire asked the respondents to: (a) list the organizational characteristics they were seeking in their employment search; (b) rank order these characteristics in terms of importance; (c) list the most attractive characteristics of their chosen organization; (d) list the most attractive characteristics of second choice (acceptors), or of Corning Glass Works (rejectors); (e) indicate how Corning and the other organization compared in salary offer; and (f) indicate whether they felt their final decision was difficult or easy.

DESIGN AND ANALYSIS

"The Index of Attractiveness (IA) is derived from Vroom's (1964) formulations suggesting that force (F) in the direction of a particular decision is a function of the sum of the multiplicative combination of the valences (V) of decision outcomes (goal objects) and the expectancy (e) that a particular decision will lead to the occurrence of the outcome. . ." "The actual IA for a particular organization was a proportion derived by dividing the total sum of valences of goal objects into the sum of the valences of characteristics listed as most attractive about that organization." The organization with the highest IA was considered the predicted choice for that individual.

RESULTS AND DISCUSSION

1. Of the individuals, 80% listed 5 or fewer job-search goals.

2. Factors listed by at least 50% of the individuals as important to them were: company reputation and performance, type of work, location, opportunity for advancement, congenial and competent associates, and starting and/or potential salary.

3. Only 75 individuals responded to questions which allowed the development of an IA for their chosen organization, and for an alternate choice. The higher IA pointed to the selected organization in 81% of the cases. The mean IA for the selected organization was .66. For the rejected organization, the mean IA was .34. This difference was statistically significant at the .001 level. In cases when prediction of choice was possible (71 cases), 86% of the predictions were correct.

4. No difference was found between mean IA for chosen company of the acceptors and rejectors of Corning offers.

5. The data suggested that perceived difficulty of decision is related to magnitude of IA differences; the greater the IA difference between selected and rejected alternatives, the easier the decision.

COMMENTS

Assuming that demonstration of the usefulness of the Index of Attractiveness in this study will generalize to other types of occupations, etc., this index shows considerable promise as a predictor of occupational choice.

94.

Perceived Monetary Value of Job Type, Company Size, and Location Among College Seniors

Richardson, L. A., Jr. (1966)

To what degree do job location, starting salary, type of work, and company size influence the employment choices of college seniors?

POPULATION AND SAMPLE

"A random sample of 113 senior men majoring in business administration at (the University of North Carolina) served as Ss. Accounting majors were excluded from the sample, because the hypothetical job situations presented in the study could not realistically be applied to them." (No further description of the population and sample was provided in the report of the study.)

INSTRUMENTATION AND DATA

There were 16 hypothetical job offers constructed, using four factors (job location, starting salary, type of work, and company size) in all possible combinations. The salaries for the job offers ranged from $5,400 to $6,200. Two general categories of positions were used—management trainee and sales trainee. The two company sizes represented in the job offers were small company with potential growth, and large, well-established company. Indiana and North Carolina were chosen as alternate states for the various job offers. Job locations were South Bend, Ind. and Winston-Salem, N. C.

DESIGN AND ANALYSIS

"The method of factorial paired comparisons was used to scale the job offers. In a complete paired-comparison design each job offer would be paired with all other "job offers." Such a task would have involved 120 pairs to be judged by each student. A balanced block design was used where not all possible pairs were presented. The students judged only 57 pairs of job offers. The proportion who preferred each job offer was determined.

"Estimates of the difference between pairs of stimuli were then obtained by looking up the arc sine deviates corresponding to the observed proportions of preference for the first member of each pair of stimuli." Analysis of variance was used in connection with the estimates of difference, in order to test "the goodness of fit of the paired-comparison model."

Main effect contrasts" were presented to represent the main effect differences between the two states for each of the factors. The salary contrast was known to be $800 between the two states. The contrasts for location, type of work, and size of company were expressed as proportions of the salary contrast. "This permitted direct comparisons of the relative values of the preferred states of the various factors."

RESULTS AND DISCUSSION

1. Analysis of variance showed that all four factors (starting salary, job location, type of work, and company size) had significant (.01) influence on the job choices of the students. No significant interactions between factors were found.
2. Contrasts between the two states for the various factors showed salary preference was the largest main effect contrast (worth $800 per year in monetary value), followed by location of job (worth $639.20 per year), job type (worth $468.00 per year), and company size (worth $164.80 monetary value). The preferred choices for each factor were: high salary, Winston-Salem, management trainee, and small company.

COMMENTS

It is not at all surprising that the students preferred a high salary to a low salary. The other factors appear to be overshadowed by location of the job. Apparently, the students preferred to be near home. Again, this result is not surprising. The results of this study cannot be generalized to other populations, since the bias of the sample, in terms of location of job, is obvious. The wisdom of using such specifics as South Bend and Winston-Salem, or other cities, in a study where location of job can have such a strong influence on other factors is questionable.

OCCUPATIONS

95.

Effects of Different College Environments on the Vocational Choices of High Aptitude Students

Astin, A. W. (1965)

To what extent does the university or college environment influence the vocational choices of high aptitude students?

POPULATION AND SAMPLE

The students surveyed included 3,538 male National Merit finalists or recipients of a Letter of Commendation from the 1957 Merit Scholarship Program.

INSTRUMENTATION AND DATA

The instruments used were: the Environmental Assessment Techniques (EAT), Holland's six classifications of occupations (realistic, intellectual, social, conventional, enterprising, artistic), College Characteristics Index (a questionnaire concerning future vocational and educational plans of each student, aptitude test scores (a description of the aptitude test was not included in the report of the study), class rankings, and other types of biographical data for each student.

DESIGN AND ANALYSIS

Three classifications of variables were studied: (a) student output (career choice at time of graduation), (b) student input (those characteristics possessed by the student upon college entrance, and (c) environmental data (characteristics of the college that may affect student performance).

Only four of Holland's six occupational types were used; conventional and artistic occupations were excluded because not enough students selected them.

All 19 student input variables were controlled by using a step-wise multiple regression analysis. The effects of college environment on each of the four occupation types were determined by permitting college characteristics to enter the regression equation after student input variables had been controlled.

RESULTS AND DISCUSSION

1. Students most likely to choose a given type of occupation at graduation are the same ones who chose the career initially.
2. The student's initial career choice and major field were the largest contributors to final career choice at graduation.
3. Orientation of the colleges had significant positive effects upon career choices in the realist and enterprising career types.
4. Career choice at graduation was affected more by student input than by characteristics of the college environment.

COMMENTS

Would these same results be found using a large random sample of all college students? High aptitude students are probably more definite about career plans than the average student. Would the relatively weak influence of the college environment on the career plans of high aptitude students also be true for low or medium aptitude students?

96.

The High Status SVIB-M Occupations

Dolliver, R. H. (1967)

Which of the occupations on the Strong Vocational Interest Blank for Men are regarded as high status by diverse groups of college students? What is the influence of occupational egocentrism on the rating of occupations?

POPULATION AND SAMPLE

The sample of 327 included 35 regular vocational students and 21 federal work study program students (from low income families) at the Ohio State University Counseling Center. A written questionnaire was sent to the following additional 271 individuals: 29 Veterans Administration clinical psychologists and clinical psychology trainees at Ohio State, 24 counseling psychology students at Ohio State, 138 undergraduates in upper level psychology classes at Ohio State, and 80 beginning freshmen students in an introductory psychology course at Cuyahoga Community College. "The group of college student subjects was selected to provide a representation of the diversity within a typical college population."

INSTRUMENTATION AND DATA

The instruments used were the Strong Vocational Interest Blank for Men (SVIB-M) and a specially constructed questionnaire (Scale for Rating the Status Level of Various Occupations)which had a format similar to Rosenberg's Requirements for an Ideal Job. The questionnaire required the individuals to select, from 51 occupation titles listed on the SVIB-M, the 10 occupations most highly regarded by the community and arrange the occupations in order of highest regard. They were instructed to base their selections on the titles of occupations, rather than persons they had known who were employed in these occupations.

DESIGN AND ANALYSIS

Ranks made by individual students were not used as such. The method for reporting the data was to tabulate the frequency with which an occupation appeared in the top 10. This method was used for two reasons: (1) not all students ranked the same occupations and (2) ranks were not as important as the identification of the high status occupations. The Kendall coefficient of concordance was used to compare the order of frequency of occurrence of the various occupations across the six groups.

RESULTS AND DISCUSSION

1. The 10 most highly regarded occupations and their frequency of inclusion in the top 10 occupations were: physician 302, lawyer 295, psychiatrist 251, dentist 220, president of a manufacturing company 218, engineer 205, architect 180, banker 176, minister and physicist tied at 163 each.
2. Kendall's W (coefficient of concordance) between ranks using the 6 groups as judges was .81.
3. There was a mild degree of occupational egocentrism shown. Psychologists' rankings were compared with student rankings for the occupation of psychologist. Results indicated that 56% and 40%, respectively, placed psychologist in the top 10 occupations. Rankings of the two groups for psychiatrist were 79% and 76%, respectively.
4. Occupational title ambiguity of two types was found: (a) occupations that have a wide economic range, such as farmer, and (b) occupations which have vague referents so that it is not clear which jobs would be included—for instance, public administrator.

COMMENTS

The sample may have been biased to some extent because over 300 of the individuals were immediately involved with psychology in some manner (counseling, class, employment, etc.). Even so, with the exception of psychiatrist, the top 10-rated occupations were not directly related to psychology. The factors which contribute to the high rankings of these occupations cannot be identified from these data.

97.

Occupational Choice and the Multidimensional Rankings of Occupations

Garbin, A. P. (1967)

What are some descriptive data concerning multidimensional rankings of occupations? What are some of the implications that multidimensional rankings have for occupational guidance and career decision-making?

POPULATION AND SAMPLE

The sample consisted of 125 students and 365 individuals in occupational subgroups (75 bankers, 112 secretaries, 109 professors, 33 morticians, and 36 manual workers). Two-thirds of the individuals were college-trained, Protestant, Caucasian males, under 42 years of age. All but the bankers were residents of Louisiana.

INSTRUMENTATION AND DATA

A questionnaire requested the individuals to indicate their personal ratings of 30 defined jobs (physician, lawyer, barber, dancer, etc.) in 21 work dimensions (rewards of the work, intellectual training, working conditions, etc.). A 5-point scale with a continuum from 1 (very low) to 5 (very high)was used. Respondents were directed to base their opinions on the occupational position, rather than a person who performed a given kind of work. The questionnaire was mailed to the respondents. (The percent of return on the questionnaire was not stated in the report of the study.)

DESIGN AND ANALYSIS

"Three hypotheses were tested:

Hypothesis 1—The respondents' perception of the occupations in each of the dimensions under study will yield hierarchically arranged rank orders.

Hypothesis 2—There will be no significant differences among the dimensional rankings suggested by each of the highly diverse subgroups composing the sample population.

Hypothesis 3—Although the ratings attributed to most of the occupations will result in relatively irregular rating profiles, it is expected that: (a) certain types of jobs will share a similar rating pattern, (b) occupations in the middle of the prestige hierarchy will have the greatest disconsensus of rating patterns, (c) jobs, when judged in certain categories of related dimensions, will exhibit a more regular profile."

Mean scores were computed for each of the occupational ratings. The mean scores were then used in converting rating scores into rank-order hierarchies. Rank-order correlations among the rankings of each of the six subgroups were .90 and above. In view of the consensus between the subgroups in ranking occupations, all data were presented for the sample as a whole instead of by subgroups.

Each of the 21 dimensional ratings of the 30 occupations was assigned a plus, zero, or minus profile score based on whether the rating was in the highest, middle, or lowest 10 occupations. The occupations were then arranged from top to bottom according to over-all prestige rating. Comparisons were made of the rating consistencies of the 30 occupations across the 21 dimensions.

To determine whether or not related occupations showed similar profiles, the total profile scores of the occupational ratings were divided into eight occupational categories (professionals, proprietors, quasi-professionals, recreational workers, farmers, clerical and sales, craftsmen, and operatives). All of the profile scores were classified as either consistent or inconsistent, depending upon the agreement between prestige ranking and profile scores.

The profile scores were again classified as either consistent or inconsistent to test the hypothesis that dimensions characteristic of a certain category were rated more similar than the dimensions in another category. The dimensions were grouped into six areas: intrinsic nature of the work, intellectual and training requirements, individual independence in the work situation, working conditions, inter-personal relations, and rewards of the work.

RESULTS AND DISCUSSION

1. Hypothesis 1 was supported. The evaluations awarded to the 30 occupations appeared to be hierarchical in each of the 21 dimensions.
2. Hypothesis 2 was supported. Only minor differences were found between hierarchies suggested by subgroups.
3. Hypothesis 3b was supported. The middle occupations in the prestige ranking were more varied in terms of dimensional ranking than the occupations at either extreme of the hierarchy.
4. Hypothesis 3a was partially supported. The eight occupational groups showed decreasing similarity within the groups at the middle of the hierarchy. Professionals and laborers (the extreme groups) showed the greatest similarity.
5. Hypothesis 3c was supported. Consistent rating patterns were found in the areas of intellectual and training requirements (75%, or 90 of 120), inter-personal relations, intrinsic nature of the job, and rewards.

(A complete description of how the percentages were derived was not provided in the report of the study.)

COMMENTS

Groups of respondents who differ greatly from each other in terms of their occupations, nevertheless, rank-ordered the 30 occupations in a simiar manner. The question of why this is the case cannot be answered from these data.

Hypotheses 1 and 3b should be supported on the basis of the nature of ranking procedures. The findings related to the other hypotheses corroborate common sense (which also appears to be the source of the hypotheses). One wonders what the theoretical or practical value of these findings might be.

98.

Occupational Choice and Attitude Change

James, F., III (1964)

Do ratings of an occupation, by individuals intending

to enter the occupation, and ratings of personal characteristics become more congruent as the time spent preparing for the occupaiton increases? Do ratings of a specific occupation—teaching—change more when made by prospective teachers than when made by prospective engineers?

POPULATION AND SAMPLE

The experimental group consisted of the undergraduate male student body in the University of Virginia School of Education (winter 1962-63).

The control group consisted of freshmen entering the School of Engineering at the University of Virginia.

(A complete description of the sample and sampling techniques was not provided in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were Roe's system of occupational classification, and the semantic differential scales.

DESIGN AND ANALYSIS

Education students were selected because conditions of attitude change (discrepancy between self-image and ideal image) were likely to occur in their chosen profession.

To provide some control for commitment to teaching, each experimental student was asked to rank, in order of preference, a wide variety of occupations selected from each of Roe's eight occupational classifications. Education students were classified as either high teacher ranking or low teacher ranking, depending upon where in a hierarchy of occupations they ranked school teacher. Three groups were studied: high teacher rank, low teacher rank, and engineering students.

Two hypotheses were tested:

Hypothesis 1—Each time an individual thinks of himself as a member of a chosen occupation, any incongruity he perceives between self-expectations and his concept of persons in his chosen occupation will create pressure for attitudes toward both of them to change until congruity between them is attained.

Hypothesis 2—The more frequently these changes toward congruity occur, the more likely it will be that the changed attitudes will become permanent.

To test the first hypothesis, the students were asked to rate two concepts—school teacher and myself-in-10-years (self)—on each of the 48 semantic differential scales. The ratings were compared for the three groups using a 2 x 3 factorial design.

The second hypothesis was tested by dividing the education students according to class and level of teacher ranking. It was assumed that the longer a person was committed to education as a profession, the more congruent he would become in his perception of self and the teacher image. The mean discrepancy scores were computed for each of the classes. It was predicted that discrepancy would decrease with class in school; i.e., seniors in education would be more congruent than freshmen. Prediction was made only for the level of high teacher ranking. Trend analysis was used in analyzing this prediction.

RESULTS AND DISCUSSION

Both hypotheses were supported.

1. Education students who most favored teaching tended to change their concept of a school teacher and self-expectations toward congruence when discrepancy was made apparent to them in a test situation. Concepts toward self and teaching held by engineers did not change.
2. There was a significant linear trend in the direction of congruence from freshman year to senior year in the high teacher ranking group. (This trend may, in part, be accounted for by the attrition of students who display the most self and occupational image discrepancy.)

COMMENTS

The results of this study were all based upon "paper and pencil" situations. What a student perceives in a written statement may or may not be a valid measure of his attitudes, and more specifically his willingness to change his image of himself and his profession. To the extent that the results of this study (as assessed by paper and pencil tests) reflect the other behaviors of the students related to the problem, these results suggest that advanced education students see themselves and teaching in a more congruent manner than beginning education students. The question of whether this is due to changing perceptions of self or teaching, or to differential attrition, is only partially answered by these data.

99.

What Do Better College Students Want From Their Jobs?

Paine, F. T. (1969)

What are the comparative job expectations of average and above-average college students?

POPULATION AND SAMPLE

The sample consisted of 137 male, University of Maryland undergraduate volunteers; 46 from honors dorms and 91 from regular dorms. "Honors students had met the honors admission requirement of a 3.0 over-all grade point average. . ."

The two groups were comparable in age (range and average), college level and major, religion, work and military experience, socioeconomic background, and father's occupation.

The grade point average was 2.23 for regular students and 3.20 for honors students.

INSTRUMENTATION AND DATA

A questionnaire was developed to obtain the relative degree of influence that intrinsic and extrinsic job factors would have on the respondent's occupational choice.

The items rated were: salary increases; close supervision; promotions, etc. (extrinsic factors); and interesting work, respect, physical danger, etc. (intrinsic factors).

DESIGN AND ANALYSIS

Respondents were given the questionnaire and asked to rate each of the items. "If a factor would influence the respondent not to choose an occupation, he indicated the degree of influence on –1 to –5 scale.

If the factor would influence him to choose an occupation, then he indicated the degree of influence +1 to +5. A score of 0 indicated that the factor would neither positive nor negative influence on the student's occupational choice."

The mean was computed for each item and then the items were ranked. "The influence ratings for the two groups were compared with a 'Z' statistic."

RESULTS AND DISCUSSION

1. Honors students rated four intrinsic job factors as significantly more influential in thier occupational choice than did the regular students. These were: (a) quality work, (b) self-development, (c) freedom on the job, and (d) agreement with organization's objectives.
2. Honors students rated five extrinsic factors as significantly more influential than did the regular students. These were: (a) not close supervision, (b) educational facilities for yourself, (c) peer relationships, (d) co-workers with similar educational backgrounds, and (e) chance for wife to work.
3. The regular students rated 13 extrinsic factors as significantly more influential than did the honors students. These were: (a) salary increases, (b) promotions, (c) steady employment, (d) physical working conditions, (e) security benefits, (f) vacations, (g) knowing what's going on, (h) bonus and stock option plans, (i) social status, (j) chance to become self-employed, (k) overtime work, (l) normal work week, and (m) written job description.
4. The regular students did not rate any intrinsic factors as significantly more influential than did the honors students.
5. Both groups rated close supervision and mandatory union as very powerful negative influences.
6. Both groups rated interesting work and respect as very powerful positive influences.

COMMENTS

The Z test which was used is a confusing term. It could mean that the researcher used the unit normal distribution to determine his critical values in testing for significance. If this is the case, it would seem inappropriate, since this was a sample and not the population.

Also, since the item means were ranked by group, it would have been interesting to see what the correlation between two groups' over-all ratings would have been. The rank difference correlation (rho) could have easily been applied.

"These results, if replicated elsewhere, may be useful for union officials and management personnel. Their recruiting and organizing efforts have to be varied somewhat to be more successful in attracting and motivating college students who are potential participants in their organization."

100.

The M.B.A.: Some Job Selection Criteria

Ryans, J. K. and Hise, R. T. (1967)

What criteria are most important to the M.B.A. student in considering a firm as a potential employer?

POPULATION AND SAMPLE

Included in the study were 68 full-time M.B.A. students at the University of Maryland. (No other sample selection information was provided, nor was the year of the study supplied.)

INSTRUMENTATION AND DATA

Eleven job selection factors (starting salary, location, job security, etc.) were to be ranked by the students.

DESIGN AND ANALYSIS

The students were directed to put 11 job selection factors in order of importance. In analyzing the results, students were classified according to various demographic characteristics (such as marital status) and undergraduate major to determine if certain groups have different attitudes toward job selection.

RESULTS AND DISCUSSION

1. When the 68 students were considered as a group, they ranked the 11 job selection factors in the following order of importance: (a) nature of work, (b) opportunities for advancement, (c) starting salary, (d) working conditions, (e) job security, (f) company reputation, (g) training programs, (h) fringe benefits, (i) location, (j) prestige of the industry, and (k) opportunities for graduate study.
2. M.B.A. students with business and economics undergraduate majors consider job security less important than do those with liberal arts or engineering undergraduate backgrounds.
3. M.B.A. students with engineering and liberal arts undergraduate majors rate training programs less significant than do those with business and economics undergraduate majors.
4. Unmarried M.B.A. students consider training programs more important than do married M.B.A. students.
5. Married M.B.A. students rate fringe benefits more significant than do single M.B.A. students.

COMMENTS

Since this study drew its sample from just one university, caution is suggested in generalizing results to any other population.

EMPLOYERS

101.

Impact of Recruiting Channels

Behling, O., Friedman, M. A., and Jankura, P. (1968)

What are the factors which influence a student's attitude toward a company?

POPULATION AND SAMPLE

"Participants in the study were selected from 175 seniors enrolled in management courses at Ohio State. After an initial interview, 113 were dropped from the study because they were entering military service or graduate school, had already decided on a position, or for other reasons were not actively seeking employment." The number of students was thus reduced to 62. (The report of the study provided no explanation of the sampling procedures.)

INSTRUMENTATION AND DATA

From a list of companies scheduled for campus interviews during January, February, and March 1967, the students selected three companies which they felt would be good places to work and three companies which they felt would be poor places to work.

Each week they filled out a questionnaire about their attitudes toward the six firms and the specific channels through which they had received information about each firm. The questionnaire contained three parts: a nine-point rating scale of four areas (direct financial compensation, security-oriented programs, educational benefits, recreational programs); six sets of paired objectives to measure attitudes toward the firm; and a question asking the student to list the channels of communication through which they received information for that week.

DESIGN AND ANALYSIS

Forty-two sets of usable forms were obtained, covering 6 to 10 weeks of the most active recruiting period.

Responses (attitudes) were compared for magnitude and direction of change from week to week and associated with the particular channels of communication. (The report of the study did not provide an explanation of the statistical procedures employed.)

RESULTS AND DISCUSSION

1. The most frequently listed channel of communication was company advertising, followed by talks with student friends, talks with recruiter, recruiting literature, talks with a family member, and talks with a non-recruiting employee of the company. Other channels were listed, but much less frequently.
2. A consistent pattern of differences was found between the mean shift values (associated with specific contacts and no contacts) and those obtained when no channels of communication were active between student and firm. Significant changes were observed in the student's expectation concerning the four aspects of job offers in all cases except educational opportunities, which appeared to be rather immune to change through direct, personal contact by the company.
3. ". . .the 'goodness' of firms, on the other hand, remained comparatively stable during the weeks in which contacts through specific channels occurred."
4. The only significant difference among the effects of various contacts concerned expectations about financial aspects of the job offer during the week when the offer was actually received.
5. The highest quality candidates showed the least change resulting from personal contacts with the firms.
6. Conclusions: (a) student views are relatively easy to change concerning specific aspects and (b) perceived over-all goodness of the company remained generally unaffected by any of the contact's studies.

COMMENTS

Considering the two conclusions of the authors, the next step would be to investigate what contributed to the estimation of over-all goodness to make it so unchangeable.

102.

How College Students Find Jobs

Behling, O. and Rodkin, H. H. (1969)

What factors influence college students to select companies for interviews and employment?

POPULATION AND SAMPLE

"A total of 18,503 usable questionnaire responses were received between September 15, 1968, and March 15, 1969, a period which encompasses the core of the 1968-69 season. The over-all response rate was 50 percent."

"In other words, this represents one response for every two interviews taken at cooperating schools."

There were 46 colleges and universities cooperating in the study.

It was possible to obtain a large sample because the data were fathered by the A. C. Nielsen Company, an international marketing research organization.

INSTRUMENTATION AND DATA

A two-part questionnaire was used to determine why the students decided to attend the initial interview and what factors influenced them to select a particular company for employment.

The first part of the questionnaire asked the student why he presented himself for the interview. He could choose from seven responses: (a) suggestion by friend or family, (b) suggestion by faculty member or placement officer, (c) previous contact with company, (d) interest in kind of work done by company, (e) reputation of company, (f) desire to practice being interviewed, (g) other.

The second section of the questionnaire asked him to rank, in order of importance, 10 factors which affected his decision to accept a position. The factors included: (a) type of work, (b) amount of challenge, (c) chances for advancement, (d) location, (e) opportunity for travel, (f) salary, (g) training program, (h) fringe benefits, (i) size of company, (j) chances for draft exemption.

Also included on the questionnaire were items which requested the last degree completed and type of major. The type of major was divided into three groups: arts, business, and English.

DESIGN AND ANALYSIS

The questionnaire responses were categorized by degree completed and by major within degree. This yielded nine groups. Results were tabulated in simple percentages or average numerical ranking.

RESULTS AND DISCUSSION

1. The factor having the strongest influence on students to select companies for campus interviews was interest in kind of work done by company. This was by far the most potent influence in all nine groups.
2. The second most powerful influence was reputation of company. This item was second in all nine groups.

3. Those with a bachelor's degree tended to rate previous contact with company as the lowest influence, except English majors, who ranked it third most powerful.

4. The only other noticeable and consistent trend of the data was the low percentage of those with doctoral degrees choosing desire to practice being interviewed. This was the least influential factor for all three majors in the doctor's group.

5. Type of work or service performed was ranked as being most influential in choosing a company, except in the case of master's and doctoral degree business majors who ranked it second.

6. Amount of challenge was ranked as second most powerful influence in selecting a company, except for business majors in all three degree levels, where it was ranked first by master's and doctor's and third by bachelor's degree holders.

7. The factors which were ranked consistently lower by all groups were: size of company, opportunity for extensive travel, and increased chance for draft exemption. These factors were ranked as the least influential in selecting a company by all majors at all degree levels.

COMMENTS

The large sample is somewhat offset by the rate of return (50%) which still opens the possibility of bias. However, it is unfortunate that the majors were so grossly lumped together. It is likely that if the sample were further subdivided by majors, the number of meaningful and important differences among groups would have increased.

The observation that type of work or service performed tended to be the most important factor in the decision to be interviewed *and* to accept employment deserves much attention. In conjunction with the observation that amount of challenge was the other highly important factor in accepting or rejecting employment, these findings lend strong support to the contention that intrinsic factors are more important in employment decisions than extrinsic factors, such as salary, fringe benefits, etc.

FIRST EMPLOYER

103.

Analysis of Candidates Who Accept and Decline Offers of Regular Employment

Anonymous (1969)

Why do candidates accept or decline offers of regular employment?

POPULATION AND SAMPLE

Questionnaires were sent to college graduates who had received job offers from a major petroleum company during the 1968-69 college recruiting season. The study was limited to B.S. and M.S. graduates in engineering, accounting, business administration, liberal arts, and math and science.

A total of 612 usable questionnaires were returned: 447 from graduates who declined an offer and 165 from graduates who accepted. Some of the organization units connected with the petroleum company did not survey those who accepted positions. (The exact number of questionnaires sent was not indicated in the report of the study.)

INSTRUMENTATION AND DATA

The questionnaire, "Your Employment Decision," was composed of five parts. The first three parts required the respondent to compare the investigating company with other possible employing companies. The rating system used a 5-point scale—a rating of 1 on the scale indicated "among the worst" and 5 indicated "among the best." Part 1 of the questionnaire was entitled, "Your Impression of Us and Our Industry"; Part 2, "Our Campus Contacts with You"; and Part 3, "Your Visits to Our Plants and Operations." Part 4 gathered data about the type of job accepted, salary, and other biographical data. Part 5 was an open-end request for suggestions or information.

DESIGN AND ANALYSIS

Means and standard deviations were computed separately for those who accepted and those who declined employment for each of the 25 items contained in the first three parts of the instrument. The 25 items were rank-ordered by mean value according to degree of favorability toward the company.

Comparisons were made between the ranking of those who accepted offers and those who rejected offers made by the company. A biserial coefficient of correlation was computed between the two rankings.

A regression-analysis technique was used, combining all 25 item scores for each graduate into one predictive index. The 142 graduates with the highest indexes and the 374 with the lowest were used for this analysis. Index scores were correlated with decision to accept or reject a job offer.

RESULTS AND DISCUSSION

1. The highest rated item was "general reputation of our company as an employer," with a score of 4.57 of a possible 5.00.

2. The lowest rated item was "location as a starting assignment" (3.51).

3. The most important items influencing the decision to accept or decline were: location as a starting assignment, opportunity for advancement, training for new opportunities, type of starting assignment, facilities, and salary policies.

4. On all items except brochures about the company, acceptors consistently rated the company higher than did the rejectors.

5. A correlation of .64 was found between predictive index and decision to accept or reject the job offer. This indicates that those who accepted also rated the company highest.

Since some of the organization units connected with the petroleum company did not survey those who accepted positions, certain limitations are thus imposed on the conclusions which can be drawn from the results.

COMMENTS

The results are fairly clear-cut. People who accepted positions liked the company better than those who rejected positions. This is not surprising. The finding that has the greatest value is number three, in which the most important influences to either accept or decline an offer were listed. This finding does indicate (and is somewhat consistent with other studies) what college graduates consider important in accepting new positions.

104.

The Occupations They Are Choosing

Dickinson, C. and Newbegin, B. (1968)

What are the initial occupational choices of college graduates?

POPULATION AND SAMPLE

The sample included 1,171 male students who graduated from the University of Washington between March and December of 1966.

INSTRUMENTATION AND DATA

The data were collected by means of a follow-up questionnaire mailed the month following graduation. The return on the questionnaire was 75%. The data included salary of the respondent, his position, and field of employment.

DESIGN AND ANALYSIS

The career field and position of each graduate were recorded, and the percent of students in various fields was determined. Correlations were computed between salary and curriculum and level of academic performance.

RESULTS AND DISCUSSION

1. Graduates in business administration selected careers in industry (47%) and the military (34%) most frequently.
2. Engineering graduates chose industry (53%) and graduate school (21%).
3. Liberal arts graduates were more diverse in their selections, which included: graduate school (36%), military (23%), industry (18%), teaching (11%).
4. The social and natural science graduates were very close in terms of percents and areas—graduate school was their main selection (46% and 49%), followed by the military (26% and 21%) and industry (12% and 18%).
5. Education graduates chose teaching (58%) and graduate school (17%).
6. Comparison of the mean salaries by college curricula showed engineers to be the highest paid ($685 per month) and liberal arts and social sciences graduates to be the lowest paid ($542 per month).
7. In all college curricula, the highest percent of students going on to graduate or professional programs came from the top quartile of college grade point average.

COMMENTS

This study was simply a report of the professional standings and choices of the graduates from the University of Washington. The results reveal nothing really new in terms of career placement, but they do help to describe the situation. The inclusion of the military as an occupational choice leads to confusion. Are some of the students in this category actually draftees or enlistees who view this as only a temporary choice? If so, then the actual occupational choices of these students, which have been temporarily postponed, may change the percentages in other categories to a considerable extent.

INTERVIEWING

RECRUITERS

105.

Perceptions of the Selection Interview

Downs, C. W. (1969)

What factors are considered to be most important in a selection interview, as perceived by interviewers and interviewees, and to what extent do the two groups agree in their perceptions?

POPULATION AND SAMPLE

The sample included 76 professional recruiters who interviewed at the Northwestern University Graduate School of Business during the winter of 1967. They represented diverse companies and were interviewing candidates for a wide range of jobs, including finance, marketing, production management, sales, banking, and advertising.

Also included in the project were 152 students in the Graduate Schools of Business at Northwestern and the University of Chicago These students were interviewing for permanent or summer jobs. (The report of the study provided no further description or information about the sample.)

INSTRUMENTATION AND DATA

The instrument used was a comprehensive questionnaire. Six selected key areas were: (1) "A forced-choice question asked: 'What is the greatest objective of your interview'? " (2) Respondents were asked to rank 25 factors in their order of importance (factors such as good scholastic record, work experience, poise in the interview, humility, etc.). (3) "In a thirty-minute interview, when do you feel most interviewers have made a rather conclusive judgment?" (4) "After the interview, how confident are you of your decision?" (A multiple-choice item for interviewers only.) (5) "What are the most frequent complaints that you make or hear about interviewers?" (6) Interviewees were asked to "describe some of the most memorable techniques used by the interviewers."

DESIGN AND ANALYSIS

The comprehensive questionnaire was completed by the interviewers, and a modified version was given to the interviewees. The Kendall Rank Correlation was used to check the relationship of the ranking questions. Percentages were used in reporting most other results.

RESULTS AND DISCUSSION

1. The interviewers and the candidates both agreed that the primary objective of the interview was to find out what kind of person the candidate is. This item was selected by 78 percent of the interviewers and 68 percent of the candidates.

2. Selection factors ranked, in order of importance by the interviewers and the interviewees, correlated .95. Both groups rated enthusiasm and motivation, ability to communicate orally, emotional stability, aggressiveness and initiative, and confidence in himself as the top five. Both groups also rated married as the least important factor.

3. "Few interviewers wait until after the interview to make a decision. According to the interviewers' estimates, the average time required for making a decision was 17 minutes, and both interviewers and interviewees feel that over 50% of the decisions are made within the first 15 minutes."

4. The mean level of confidence in their decisions for interviewers was 81%; 90% were at least 60% confident, but only 3% were 100% confident.

5. Primarily, interviewees complained that interviewers had a general deficiency of information about specific jobs and their requirements, about particular departments of the company, and about specific job opportunities with the company.

Other complaints mentioned frequently were lack of time and failure to establish rapport with the candidate. Mentioned least often were failure to listen, arguing with the candidate, and lack of privacy.

6. When interviewers ranked the complaints they heard most often about themselves, they mentioned talks too much, inadequate information about a job, and lack of time. They mentioned least often lack of privacy, asked biased questions, and arguing with the candidate.

The comparison of complaints as ranked by interviewers correlated .84.

7. Some of the most memorable techniques used by interviewers as recalled by interviewees were: "Low key interviews are the most enjoyable. Those who impress me the most are those who just ask to talk with me. I like interviewers who make some personal identity with me or who make me feel important."

COMMENTS

This was a multi-faceted study and included additional aspects, results, and practical applications not presented in this abstract. It contains information which would seem to be vital to interviewers and to recruiters in general.

106.

Campus Recruiters: Their Preferences and Practices

Hilgert, R. L. and Eason, L. A. (1966-67)

What things do campus recruiters look for in the campus interview, and what are some of the things they do as part of the recruiting process?

POPULATION AND SAMPLE

The sample consisted of one representative from each of 109 companies who had recruited on the Washington University (St. Louis) campus during the 1964-65 academic year. A questionnaire was sent out in May 1965 to each representative. Sixty-seven questionnaires were returned and used in the study, a 61% return.

The responding companies represented 28 industry classifications: insurance companies, accounting firms, department store chains, chemical companies, and others. The diversity of companies suggests the sample was reasonably representative.

Of the responding companies, only nine reported less than 1,000 employees.

INSTRUMENTATION AND DATA

Company representatives were sent a questionnaire which was designed to gain information about their recruiting program and recruiters. The following were included in the questionnaire: portion of total job responsibility occupied by campus recruiting, scope of campus recruiting program, the number of students interviewed each year by their company, nature of the positions for which they recruit on campus, and their preferences of college degrees. Another part of the questionnaire asked the recruiter to make suggestions that could be of help to students in the placement interview.

DESIGN AND ANALYSIS

Responses were collected and tabulated. Results were reported in terms of total numbers and percents. Numerical tabulations were used in a cross tabulation of various groups of companies to determine the order of preference of college degrees they seek when recruiting.

RESULTS AND DISCUSSION

1. Results indicated that campus recruiters are professionals; about 63% said all, or most, of their time was spent in campus recruiting.

2. About 65% of the companies visited between 61 and 300 campuses annually.

3. The number of students interviewed annually surpassed 100 for 66% of the representatives responding.

4. The areas most often recruited were management trainee, accountant, sales trainee, and engineer.

5. The ranked preferences of college degrees by recruiters revealed that about two-thirds selected B.S. or B.A. as their first or second choice.

6. The suggestions made by the interviewers for the college student were: (a) prepare thoroughly for the interview by reading the company literature (91% of the respondents made this suggestion); (b) be yourself (60%); (c) know what your objectives and interests are (52%); and (d) make a good first impression by being punctual, neat, and conservative in dress (50%).

7. Most large companies do not offer positions directly as a result of the interview; an invitation to visit the company is usually extended first.

COMMENTS

The results of this study appear to have some informative value to the student who is looking forward to the placement interview experience.

107.

Student Opinions of the Placement Process

Thronson, H. A. and Thomas, W. G. (1968)

How do students feel about the placement process? Are they qualified to judge?

POPULATION AND SAMPLE

The population for this study consisted of 17,498 student placement service users at 54 colleges and universities of 11 western states. The sample included 21% of these users who returned the questionnaire sent to all students in the population by the Western College Placement Association (WCPA) Research Committee.

INSTRUMENTATION AND DATA

The instrument used was a questionnaire especially designed to gather data in four main areas: student informational data, the placement office, employer recruitment, and the over-all campus process. One section of the questionnaire contained four open ended student responses.

DESIGN AND ANALYSIS

Questionnaires were distributed through the placement offices at the various universities and colleges. Each placement office determined to whom the questionnaire would be sent. An attempt was made to include all levels of college degrees in the study. The data were tabulated and reported as totals and percents.

RESULTS AND DISCUSSION

1. The results provided the following demographic data for the sample: (a) the disciplines represented were business, engineering, liberal arts, and sciences; (b) 78% of the students were candidates for a bachelor's degree at the end of that current semester, followed by 18% for master's degree, and 5% for doctoral; (c) 52% of the students had participated in six or more job interviews; (d) most of the interviews were conducted by industry, government, business, and accounting.

2. Results showed that placement programs were satisfactory, in terms of scheduling companies, interview arrangements, placement interviewing, and brochure availability. Placement programs were found unsatisfactory in career guidance and job counseling, and the orientation to, and publicizing of, the placement program.

3. Students seemed satisfied with the recruiters and their knowledge about their own organizations, as well as about the school and its programs.

4. The normally used interview techniques were evaluated favorably by students. Those techniques liked most by the students were: discussion of actual jobs, discussion of student skills and interests, and discussion of student goals. Those techniques liked the least were pressure questioning and emphasis on grade point average.

5. By far, the most important source, or service, used by the students in getting a job was the placement interview. About 52% felt that the placement interview had a direct effect on their getting a job. The next most important source, or service, was other personal contacts (13%).

COMMENTS

In a study of this type, the representativeness of the sample means a great deal. One question that should be asked concerning the study and its results is, "Was the sample biased?" Since only 21% of the population returned the questionnaire, the sample was definitely biased. In addition, the questionnaire was sent only to users of the placement service, and, therefore, excluded those who did not use the service.

EVALUATION FACTORS

108.

The Relative Influence of Appearance and Factual Written Information on an Interviewer's Final Rating

Carlson, R. E. (1967)

What is the relative influence of appearance and factual written information on an interviewer's final rating?

POPULATION AND SAMPLE

Two samples were used in the study. One sample included 400 life insurance agency managers who were attending, or had attended, 2-week schools in agency management conducted by the Life Insurance Agency Management Association. This number represented 75% of the managers who took part in the schools. (No further description of this sample was included in the report of the study.)

A second sample of 315 managers was used to rate 39 photographs to be used as part of the data collection instruments. (No further description of the second sample was provided in the report of the study.)

INSTRUMENTATION AND DATA

The instrument used was a list of 125 information items selected at random from a total list of 600. Each manager was asked to rate each item independently using a seven-point scale. The basis for the rating included the way the manager perceived the information and whether or not he would consider hiring the person described by the information. Two special blanks were provided for the managers to classify the information as either totally qualifying or totally disqualifying the individual for employment. "Each of the 600 items was evaluated by over 100 managers, and item means and variances computed. The mean served as a measure of item favorableness, and the variance served as a measure of interrater agreement."

The list was administered to the managers again one month after completion of the school. The two sets of data were compared, and test-retest agreement for each item was determined by the percentage of respondents who rated the item exactly the same on both administrations. The distributions of means, variances, and test-retest measures were all dichotomized at the median. A 2x2x2 factorial arrangement was used in which all items fell into one of eight cells. Eight hypothetical applicants were constructed from the items in each of the eight cells.

A similar procedure was followed to construct hypothetical applicants using appearance. Thirty-nine photographs were rated by 315 managers. The photographs were combined with the hypothetical applicants in complementary (same relative level) and contrasting (opposite values) patterns.

A separate test booklet was prepared to represent each of the resulting 16 cells. The booklet presented descriptive or written information alone, photograph alone, and then written information and photograph combined. Each manager was asked to rate a prospective applicant on his relative potential for success as a life insurance agent using a nine-step behavior-description rating scale. Ratings were completed for each of the three presentations. The managers were also asked to rate applicants on a five-point scale according to how each hypothetical applicant compared with other real applicants each manager had interviewed in the last year.

DESIGN AND ANALYSIS

The design of the study consisted of two, 2x2x2 factorials, each with two covariates. Managers were assigned treatment combinations at random.

The three independent variables were two levels of information favorableness and two degrees each of inter- and intrarater agreement. The dependent variable was the rating of the photograph and written information combined. The covariates were the separate ratings of the photograph and written information.

The analysis consisted of a step-wise analysis of covariance using the general linear hypothesis model.

The analytic procedure was repeated for both complementary and contrasting pattern of hypothetical applicants.

RESULTS AND DISCUSSION

Complementary patterns:

1. The results showed that the effect of the photograph on final judgment is negligible, while the effect of written information is substantial.
2. The interactive effect of the photograph and written information, when both were treated as covariates, was negligible when compared to the effect of the written information alone.
3. Analysis of variance and analysis of covariance indicated that some meaningful variance existed in the rating of the photograph and written information combined, above and beyond that contributed by the separate ratings of the photograph and written information.

Contrasting Patterns:

1. Again the effects of the written information were far more substantial than the effects of the photograph alone.
2. A comparison between effects of the covariates in the two patterns showed a greater effect when the pattern was complementary.
3. In the contrasting pattern, the written information accounted for the significant effects of treatment.

It was concluded that written information (accounting for 40% of the variance) had a more significant effect on the final over-all rating of the hypothetical applicant than did personal appearance (accounting for only 5% of the variance), and that a rating of the written information and photograph combined still only accounted for less than 50% of the total variance.

COMMENTS

Several of the procedures were not perfectly clear in the report; for example, reference is made to 125 items selected at random, but there was no indication for what they were used. All 600 items on the original list were used in constructing the hypothetical applicants.

The exact size of the sample and a description of the managers were lacking in the report.

The measurement of personal appearance was 39 photographs of employees of the Life Insurance Agency Management Association. These photographs probably showed some differences in attractiveness, but certainly they must have all been acceptable in the life insurance business since that is where they were employed. A better criterion may have increased the effects of appearance on the decisions made.

109.

Beauty, Bias, and Business

Carroll, S. J., Jr. (1969)

What personal characteristics of college seniors are related to successful recruiting experiences?

POPULATION AND SAMPLE

The sample consisted of 211 graduating business school seniors. (The report of the study gave no information regarding how the students were selected, what colleges were represented, what year the study was conducted, and what proportions were male and female.)

INSTRUMENTATION AND DATA

The college placement service files provided such data as height, major, marital status, memberships and leadership positions in college organizations, military status, size (fat-thin), type of work preferences, weight, and types of work experience. Also included was a measure of appearance rank or handsomeness. This was based on evaluations of the graduates' photographs by three judges.

"The criteria of student college recruiting success consisted of: number of visit offers received from companies, number of job offers received from companies, number of visit offers received as a proportion of number of interviews taken, number of job offers received as a proportion of visit offers accepted, and these four criteria combined into one measure."

"Criteria data were obtained by means of a questionnaire sent to the homes of the graduating seniors."

DESIGN AND ANALYSIS

"The combined criteria measure was constructed by comparing a student's success on each criterion with the median success of all students on that criterion and scoring above the median as 1 and below the median as zero. Scores on the combined criterion measure ranged from 0 to 4."

Correlations were made between all 19 student characteristics and each of the five criteria.

(The report of the study provided no information regarding the type of statistical test which was used to test for significance.)

RESULTS AND DISCUSSION

1. Only three of the 19 characteristics were significantly (.05 level) related to any of the five criteria of student college recruiting success. Handsomeness was significantly related to three criteria of recruiting success. Office experience was significantly related to two criteria. Marital status was significantly related to one criterion.

2. Student characteristics not related to any of the criteria were: age, grades, height, major field, membership in a college fraternity, military status, non-retail selling experience, number of leadership positions in college organizations, production line experience, retail sales experience, size (fat-thin), supervisory experience, type of work preferences, wearing of glasses, and weight.

"Handsomeness was the strongest and most consistent predictor of recruiting success, since it had the highest correlations with the criteria (.26 to .30), was the only student characteristic related to the criterion representing overall student college recruiting success, and was related to more criteria of success (three criteria at the .05 level of significance and to all five criteria at the .10 level)."

COMMENTS

The failure of more traditional measures such as grades, leadership, and job experience to relate to the criteria of recruiting success, and the relatively weak relationship of handsomeness with these criteria may be due to several factors. The criteria may be unreliable, invalid indicators of occupational attractiveness.

110.

Physical Appearance and Stature: Important Variables in Sales Recruiting

Kurtz, D. L. (1969)

How important are an applicant's physical appearance and stature for sales positions?

POPULATION AND SAMPLE

A random sample of 200 employers was selected from the membership list of the Midwest College Placement Association. A questionnaire was sent to each employer. A total of 140 (70%) were returned and included in the study.

INSTRUMENTATION AND DATA

The questionnaire was designed to investigate the attitudes and opinions of employers toward stature and physical appearance of salesmen and applicants for sales positions.

DESIGN AND ANALYSIS

Responding employers were categorized by type of firm and size of firm (determined by annual sales figures).

"The data were cross-classified in order to determine whether significant differences of opinion existed among respondents operating in different recruiting situations, resulting from variations in industry characteristics and company resources." (The report of the study made no mention of what statistical procedures were used.)

RESULTS AND DISCUSSION

1. A higher percentage of employers dealing in industrial goods rated physical appearance more important than did employers dealing with consumer goods.

2. The largest and smallest employers rated physical appearance more important than did the medium size employers.

3. Responses indicated that the sample, in general, felt that the physically impressive salesman has an advantage in initial contacts, by virtue of his appearance.

4. When presented with two hypothetical applicants, 72% of the employers said they would prefer the larger fellow, if all other things were equal.

COMMENTS

None.

TRANSITION TO AND PARTICIPATION IN WORK

CAREER

111.

College Recruits Who Leave: Their Later Careers and Development

Bell System (1967)

What are the differences in the later career development of college graduates who left the Bell System and those who stayed with the company?

POPULATION AND SAMPLE

The sample consisted of 144 college graduates who were employed by the Michigan and the Chesapeake and Potomac companies of the Bell System, and who were included in the Management Progress Study in 1956 and 1957. About one-third of the graduates in each company left the Bell System between the times of assessment and reassessment (N = 47).

INSTRUMENTATION AND DATA

A follow-up study of those who left the Bell System was composed of two parts. The first part consisted of a telephone interview with each of the 44 graduates (three declined to be interviewed). The interview was conducted by a psychological consultant associated with the Management Progress Study. The interviews required approximately 30 minutes to complete.

The second part of the follow-up involved the completion of the Edwards Personal Preference Schedule (EPPS) and the Inventory of Factors GAMIN. The graduates were allowed to complete the two instruments at home. Only about one-half (24) completed and returned the forms.

DESIGN AND ANALYSIS

Reasons for leaving the Bell System were grouped and the percent of graduates in each group was reported.

Comparisons were made between those who stayed, those who left voluntarily (voluntary), and those who were asked to leave (involuntary), using results on the GAMIN and the EPPS as a basis for comparison.

RESULTS AND DISCUSSION

1. Those who left were divided almost equally into voluntary and involuntary reasons. Slightly more subjects expressed voluntary reasons for leaving.
2. Reasons for leaving included: uninteresting or unchallenging work (46%), lack of opportunity (33%), personal reasons (25%), military service (12%), other reasons (17%). The total equals more than 100% since some graduates listed more than one reason.
3. The graduates who left were found to change employers quite frequently. Less than half (43%) remained with the employer they joined immediately after leaving the Bell System and 24% had changed employers at least twice since leaving. The percent of voluntary separators who had not changed employers since leaving the Bell System was 57%, compared to 26% for the involuntary separators.
4. A greater percent of voluntary separators (65%) than involuntary separators (53%) had advanced beyond the lower levels of management.
5. Job satisfaction of the two groups who left was somewhat similar (54% voluntary and 50% involuntary). Job dissatisfaction was higher for the involuntary group (35%) than for the voluntary group (21%).
6. Later job satisfaction was related to the number of times the graduate changed jobs after leaving the Bell System (70% satisfied who had changed one or more times compared to 36% satisfied who had not changed after leaving).
7. Results of the EPPS and GAMIN showed voluntary separators were more similar to those who stayed than were the involuntary separators.
8. The changes that occurred in the voluntary separator group between time of assessment and reassessment were consistent with the changes found in the group that stayed. The involuntary group made quite different changes in magnitude and direction on several need scales of the EPPS. Those who stayed and the voluntary separators increased in their desire to lead (dominance) and to enter into new situations (change). The opposite was true for the involuntary group.
9. Differences were found between groups on two scales of the EPPS. Involuntary separators were below the other graduates on the deference scale (34, 40, and 51 percentile equivalents). The involuntary graduates were above the other groups on the autonomy scale (62, 59, and 52 percentile equivalents).

COMMENTS

The results of this study are difficult to evaluate because of the relatively low return on the EPPS (approximately 50% return). However, to the extent that the data can be assumed to be representative of the total population, the involuntary graduate emerges as a person who values autonomy, is not dominant, has changed jobs more often, and is more satisfied with his present job than the voluntary graduates and those who stayed.

The source of job satisfaction for the involuntary graduates should be analyzed. Is it a result of having found the good match or is it a result of changing goals and self-perception to allow a better match? The changes of self-perceptions in the involuntary group to less leader-oriented (less dominant, less deferential) and less change-oriented, while at the same time more autonomous, may be a somewhat elaborate defense mechanism to allow them to accept their present state.

The further question of how to generalize these results for other groups of graduates from other companies cannot be answered in an adequate fashion.

112.

A 31-Year Longitudinal Study of Engineering Students' Interest Profiles and Career Patterns

Benjamin, D. R. and LeBold, W. K. (1967)

What are the interest and career patterns of engineering students after 31 years?

POPULATION AND SAMPLE

The sample included 229 freshmen engineering students at Purdue University in 1935. When the data for the study were collected in 1965, the participants were business, technical, and professional men. The 229 represented an 86%return on a request sent to 266 Purdue engineering graduates for whom 1935 Strong Vocational Interest Blank scores were available.

INSTRUMENTATION AND DATA

The instruments used were the Strong Vocational Interest Blank for Men (SVIB-M) and the 1965 Purdue University Engineering and Science Alumni Questionnaire. The SVIB-M was used to measure interests (predictor variables) and the Purdue Alumni Questionnaire was used to investigate vocational history, education, and attitudes. Ten items on the Purdue Alumni Questionnaire were used as criteria variables: grades, educational level, level of technical responsibility, number of patents received, number of technical articles published, job satisfaction, salary, principal job function, level of supervisory responsibility, and technical-administrative function.

There were some differences between the 1927 and the 1966 editions of the SVIB-M. Only those 288 items common to both editions of the SVIB-M were used in the study. Three measures of interest stability were used: test-retest reliability coefficients for each SVIB scale using the 1935 and 1965 scores (median r = .42), individual test-retest profile comparisons (median r = .66), and group mean test-retest profile comparison (r = .79).

DESIGN AND ANALYSIS

The *t* test of significance for correlated data was applied on each of the SVIB scales. "Single classification analysis of variance was used to determine whether groups which differed on a specific criterion also differed on any SVIB scale." The alpha level was established at .01.

RESULTS AND DISCUSSION

1. Significant differences were found between the group means of 1935 and 1965 on 47 of 59 scales involved in the SVIB. In general, the retest scores were higher on administrative scales, lower on the more applied technical and scientific scales, and more toward the man-in-general range on the majority of scales.
2. The results revealed that interests were meaningfully related to all the criteria in the study in both the predictive and concurrent settings. The concurrent relationships were generally greater than the predictive.
3. It was concluded that interests of engineering students were fairly stable over long periods of time.
4. The 1965 retest scores showed that older successfully established men were more confident in their abilities than they were as college freshmen in 1935.

COMMENTS

The main finding of this study indicates that the general profiles of interests of engineering students who go on in an engineering career remain stable over long periods of time. Thus, even though statistically significant shifts were noticed in many of the scales, the relative standings on each of the scales remained somewhat the same for each individual. There appeared to be a mellowing of interests and attitudes, with applied technical emphasis turning toward a more general pattern between the 1935 testing and the 1965 retest.

113.

Careers of PhDs: Academic Versus Non-academic

National Research Council (1968)

What are the career patterns of Ph.D.s, based upon post-doctoral employment?

POPULATION AND SAMPLE

The sample included 10,000 men and women holding Ph.D.s. The sample was systematically selected from a total population of 250,000 recipients of U. S. third-level research degrees between the years 1920 and 1965. They were selected from six graduation classes between the years 1935 and 1960. The Office of Scientific Personnel's Doctorate Record File was the source for the sample.

INSTRUMENTATION AND DATA

Educational background data were collected from the Office of Scientific Personnel's Doctorate Record File.

Additional information on careers was obtained by means of a questionnaire. The information included: employment functions (teaching, research, etc.), comparative salaries and salary advancement, postdoctoral training, rate of advancement in academic rank, and research support.

DESIGN AND ANALYSIS

The participants were separated into four general employment categories: A—those always in academic work, B—those always in non-academic work, C—those who switched from academic to non-academic jobs, and D—those who switched from non-academic to academic jobs.

RESULTS AND DISCUSSION

1. The percents of individuals classified into each of the four general employment categories were A—50%, B—25%, C—12.5%, and D—12.5%, respectively.
2. Annual rates of salary increase ranged from about 8% for categories A and D, to 14% for category C. Category B was just slightly higher than categories A and D.
3. Those who switched from academic work did little teaching in their new job, but they had done less teaching in their academic jobs than those who remained. Switching gave them more research time and more administrative duties. Those who switched to the academic area increased their teaching time considerably. "A desire to teach, or to avoid teaching therefore appears to be an important determiner of career patterns."
4. Women's careers were characterized by lower salaries than men for similar number of years since receiving the Ph.D. (25% lower).
5. Fewer women were in category B. The number of women in category A was proportional to the number of men and women in the sample.
6. "Academically oriented women bioscientists have the highest percentage of postdoctoral fellowships of any group of Ph.D.s."

COMMENTS

From a status study like this, information about the actual state of things is gained, but *why* things are that way is not divulged. Why did some Ph.D.s change? Why did so many choose academic work? Is there a need to channel more Ph.D.s into non-academic areas?

114.

College Students and Military Service: The Experience of an Earlier Cohort

Sharp, L. and Krasnesor, R. (1968)

What is the effect of military service on early occupational careers of college graduates?

POPULATION AND SAMPLE

The sample consisted of 15,365 individuals who were graduated from college in 1958. The data for this study were collected in 1963.

INSTRUMENTATION AND DATA

The instruments used were a questionnaire and an attitude survey. The questionnaire obtained data on such factors as: length and type of military service, major in college, present occupational career, and present salary.

The attitude survey was used to obtain the individual's reactions to six items. The items were evaluated using a Likert-type scale (strongly agree, agree somewhat, do not agree, and no answer). The items used were: (1) During service in the armed forces, I acquired new skills which are (will be) helpful in my civilian occupation. (2) Service in the armed forces gave me new ideas about the type of work I want to do in my career. (3) Service in the armed forces wasted precious time and delayed my career. (4) Service in the armed forces gave me time to think before deciding about my career. (5) Service in the armed forces gave me working experience in my chosen career field. (6) Service in the armed forces made an important contribution to my career.

DESIGN AND ANALYSIS

The individuals were divided into three groups: men who were in the military service before going to college, men who served after receiving their bachelor's degree, and men who did not serve at all. The data were analyzed according to occupational fields in each of the three groups. Salary was used as the criterion of career advancement.

Percentages were used to indicate the relative opinions of the individuals toward military service, as measured by the six-item attitude survey.

RESULTS AND DISCUSSION

1. Men who served in the military service prior to going to college made a substantially larger salary five years after graduation than those who served after receiving their bachelor's degree.

The difference between the median salaries for the two groups was over $1,500 annually for officers, and about $650 annually for those who were enlisted men.

2. The median salary of the men who did not serve any military service was lower than those who served before going to college, and also lower than those who served as officers after college. However, the nonservice group's median salary was slightly higher than the median salary of the enlisted men who served after graduation from college.

3. The enlisted men of the pre-college group most strongly agreed that military service gave them time to think, and most strongly disagreed that military service gave them working experience in their career.

4. The officers of the pre-college group agreed most strongly that military service contributed to their careers, and disagreed most strongly that military service wasted time.

5. The enlisted men of the post-college group most strongly agreed that military service wasted time, and disagreed most strongly that it gave them working experience in their career.

6. The post-college officers most strongly agreed that military service contributed to their career, and disagreed most strongly that it wasted time.

COMMENTS

Interpretation of these results is not as clear as might first appear. For example, for those who had military service before entering college, the five years after graduation were likely all spent in their career; whereas, for those who entered military service after graduation, the five years after graduation were split between career and the service. Thus, the interpretation of the salary difference is confounded by length of time in career.

Similarly, differences in opportunities while in the service is confounded with differences in rank. Thus, different attitudes about the value of military service may be due to rank, opportunity, or yet other variables (such as motivation).

115.

Patterns of Change in the Long-Run Career Fields of June 1961, College Graduates

Spaeth, J. L. (1965)

What are the changes that have occurred in the long-run career fields of 1961 college graduates?

POPULATION AND SAMPLE

The National Opinion Research Center (NORC) sampled 41,000 spring 1961 graduates from 135 colleges and universities. A self-administered questionnaire was mailed to each of the graduates in the sample. They were requested to complete and return it to NORC. Follow-up questionnaires were sent in the spring of 1962, 1963, and 1964. The percents of return for the four years were: 85% for 1961, 76%, 71%, and 60%, respectively. The 1964 questionnaire was extensive—24 pages for men and 44 pages for women.

INSTRUMENTATION AND DATA

A series of four questionnaires was used to measure current career decisions for each of the four years. The questionnaires soughtt information pertaining to: planned or actual enrollment in graduate school, employment, plans for future or expected career field, anticipated career activities, and so forth. The initial 1961 questionnaire asked about college experiences, social backgrounds, and other biographical-type data.

Of major concern in this study were the graduates' responses to the item on each questionnaire requiring them to select, from a list of approximately 100 career fields, the field they expected to be their long-run career field. The 100 career fields were grouped into 12 broad categories: physical sciences, biological sciences, social sciences, humanities, engineering, medicine, health fields other than medicine, education, business, law, other, and not elsewhere classified. These 12 categories were selected because they corresponded to academic disciplines.

DESIGN AND ANALYSIS

The procedures were designed to determine whether there were patterns of career change among fields, from year to year, without regard for the number of persons entering or leaving specific fields. Chi-square analysis was used to determine the probable number of changes from each field. The probable changes were compared with the observed changes. Any marked variations from chance were used as the basis for describing patterns of change. The results were reported for male graduates only. Only those changes which were at least 1.5 times greater than chance were reported in the results.

RESULTS AND DISCUSSION

The greater-than-chance changes appeared to cluster around somewhat similar fields. The changes occurring more than twice the expected rate clustered around biological science, medicine, and health fields. Graduates seemed to change back and forth between these fields with greater frequency. Two other less-pronounced patterns appeared. The humanities, education, and social science, as well as engineering, physical sciences, and business showed frequent interchange. No greater-than-chance patterns of change were found outside of similar career fields.

COMMENTS

These findings are in harmony with previous findings indicating that career changes, when they occur, usually are between similar fields or occupations. It may be that people remain within a general area because they are best prepared for occupations within a limited sphere. Also, familiarity with alternatives is likely to be greatest in fields related to the field of primary preparation.

TRAINING

116.

The M.B.A. at . . . (a Large Metals Company)

Anonymous (Recent)

How does the M.B.A. graduate perceive himself, his training, and his career at a large metals company?

POPULATION AND SAMPLE

The sample included the M.B.A.-trained managers connected with a large metals company. A questionnaire was sent to all 52 of the managers; 41 (79%) responded and were included in the study.

The managers were grouped on the basis of three variables: (a) work experience, (b) eligibility for, and designation as, a high potential manager, and (c) present job assignment. Each variable was further subdivided: work experience—(a) M.B.A., no experience, (b) M.B.A., experience, (c) M.B.A., after hired; high potential designation—(a) not yet eligible, (b) eligible, not chosen, (c) eligible and chosen; present job assignment—(a) accounting-finance, (b) marketing-sales-purchasing, (c) planning-administration.

INSTRUMENTATION AND DATA

The instrument of the study asked 10 questions concerning reasons for, and conditions of, the manager's employment and subsequent job satisfaction. The questions also probed each manager's future plans or aspirations, requested him to describe the adequacy of his preparation, and asked him to indicate which factors were of the greatest importance to his success with the company.

DESIGN AND ANALYSIS

The responses to each question were generally grouped into two or three categories, dictated somewhat by the nature of the question. Responses were listed by subgroups as outlined in the description of the sample. (No explanation of the statistical procedures was provided in the report of the study.)

RESULTS AND DISCUSSION

1. The majority of managers decided to work toward an M.B.A. sometime during their undergraduate career and were later hired directly from college without work experience.
2. Most of the managers with work experience obtained their positions as a result of their own initiative.
3. Twenty-three of the managers were hired for their managerial potential; 13 were hired for a specific position (most of these had prior experience).
4. When asked the most important factor which influenced their decision to accept employment with the company, 19 managers listed extrinsic factors (location, promotion, training, etc.); 21 listed intrinsic factors (challenging work, philosophy, quality of management, etc.). This trend was consistent across all nine subcategories.
5. Managers listed areas of finance and accounting, general maturation (written and verbal training, analytical training) as being the most beneficial areas of training for their specific jobs. Quantitative methods (research, mathematics, statistics, etc.) were listed most often as being of the least value in specific jobs.
6. Responses to the question about expected future progress with the company showed that 24 out of 41 managers had rather high, clear-cut goals. Managers categorized by present job as "accounting-finance" had the lowest expectations of career progress.
7. Personality was perceived by 18 out of 41 managers as a characteristic of the successful manager. Intelligence was listed by 10 managers and interpersonal ability was listed by 6.
8. Thirteen subjects felt that their M.B.A. training was not critical to the characteristics of a successful manager; seven felt that the M.B.A. program enhances natural abilities; and five felt that it opens opportunities and broadens viewpoints.

COMMENTS

Generalization of these results is somewhat limited since many of the questions were aimed specifically at reactions to employment at one company.

The results may have been biased by the sample. The 11 individuals who did not respond may have been those employees not doing well in the company. Of the non-respondents, 4 of the 11 were from the group designated as "high potential," but at the time of sampling they apparently had not been chosen for advancement. In several cases, the subgroups included only two or four managers thus making it very difficult to interpret the data for any generalization.

117.

Vocational Analysis of Male College Graduates in Liberal Arts

Calvert, R., Jr. (1967)

What career patterns and attitudes can be identified 5, 10, 15 years after graduation from college?

POPULATION AND SAMPLE

The population consisted of all male liberal arts graduates who earned a degree in the United States after World War II. Five-year intervals between graduating classes were considered to be adequately representative, so the classes of 1948, 1953, and 1958 were chosen as sample years. There were 412 institutions identified as offering true liberal arts degrees continuously throughout all the sample years.

Reduction of the population to a manageable sample size of 18,000 was accomplished by random elimination of cases within selected strata and years. A questionnaire mailed to the graduates had a return rate of 60.4%, or 10,877 usable responses.

INSTRUMENTATION AND DATA

A detailed, 18-page questionnaire was constructed and tested for use in the project. The questionnaire requested information of a personal nature: educational and professional background, career work experience, affiliations with civic and professional organizations, types of positions liked best, specific questions about jobs held, future goals, individual interests, geographical mobility, and marriage and family background.

DESIGN AND ANALYSIS

The questionnaire was sent to the random samples from each year's population. Statistical tests of significance were not performed on the obtained data. Simple percentages were used in reporting results.

RESULTS AND DISCUSSION

"It is impossible to condense the responses from 11,000 individual graduates or to summarize 137 statistical tables into simple and precise conclusion."

The following is an effort to focus on general conclusions:

1. "The clearest message from alumni is one of strong support for liberal education, qualified, but endorsed by the overwhelming majority of its graduates." In addition, (a) "Liberal education is not solely pre-professional. Half of its graduates hold no more than a bachelor's degree." (b) "Liberal education provides good background for later life." (c) "The graduates felt weak in their collegiate training in self-expression, despite its stated role in liberal education."
2. "Over 90% like their occupations and their employers."
3. "The traditional occupations of earlier liberal arts graduates—law, clergy, and medicine—are the choice of only 20% of today's alumni. Now the most dominant fields are teaching (at all levels) and fiscal, office, and management positions."
4. "The graduates feel strongly that liberal education should help prepare for meaningful participation in the civic and cultural life of our society." In addition, (a) "(Their) organizational memberships are much more related to careers than to social and personal needs." (b) "Religion has grown in importance since graduation—Six out of ten alumni attend religious services on a regular basis."
5. "While it was not universal, the majority of the alumni who commented felt that liberal arts institutions should stop apologizing because their courses lack immediate job practicality or compromising by introducing trade school courses."
6. "Alumni were universal in condemning the lack of career guidance offered by the liberal arts college."

COMMENTS

This study is very lengthy and exceptionally informative. It has too many vital findings, observations, and implications to be effectively and satisfactorily abstracted.

118.

Education in Industry

Joint Engineering College Administrative Council and Relations with Industry Divisions of the American Society for Engineering Education Feedback Committee (1965)

What are the perceived training needs of engineers several years after beginning their careers in industry?

POPULATION AND SAMPLE

A questionnaire was distributed to 7,185 engineers from the classes of 1955, 1956, and 1957 who were employed by 144 different companies. Fifty-six percent (4,057) of the questionnaires were returned by mail and included in the study. The sample was considered representative of the population, in terms of fields of specialization and job responsibilities.

INSTRUMENTATION AND DATA

The questionnaire designed for this study essentially had two parts. The first part contained 113 different subject areas and 10 blank spaces for additional subjects to be listed. The engineers were asked the subjects in which they felt a need for additional training. The second part of the questionnaire sought to determine the kind of work in which the engineer was involved, what his areas of preparation were, and what portion of his time was spent in particular activities.

DESIGN AND ANALYSIS

The 113 plus subjects were grouped under 10 headings which described some academic similarity between subjects. The total number of times each subject in a group was listed as being needed was reported for each group.

Five cross analyses of needs were made, based on classification of the respondents by the following criteria: engineers with bachelor's degree only (also classified by area of specialization), engineers with advanced degree (also by specialization), job function, type of industry, and member of a team or individual.

RESULTS AND DISCUSSION

1. Sixty-five percent of the respondents indicated a need for additional training in management practices, followed by technical writing (64%), and probability and statistics (60%).
2. Of the 15 subjects listed most frequently, nine subjects were non-technical and six were technical.
3. There was a great deal of similarity in the subjects needed across all areas of specialization for engineers with bachelor's degrees only.
4. Engineers with advanced degrees indicated significantly more technical and non-technical subject areas needed than did the engineers with the bachelor's degree only. The technical subjects needed were related to area of specialization.
5. Needs indicated by job function showed that researchers wanted more math and other technical subjects.
6. Aerospace industry engineers expressed the greatest needs for more technical subjects, followed by engineers with manufacturing companies dealing in electrical machinery.
7. No significant differences were found in the expressed needs of engineers working as members of a team or as individuals.

COMMENTS

The results of this study appear to have value for counseling prospective engineers and for developing training programs for engineers.

119.

The Engineer in Industry and Government

LeBold, W. K., Perrucci, R., and Howland, W. (1966)

What are the background, composition, function, and educational needs of engineers in industry and government?

POPULATION AND SAMPLE

A list of organizations recruiting engineers during 1962, 1963, and 1964 was obtained from the College Placement Annual and the Engineer's Job Directory. Using the Standard Industrial Classification (SIC) system, each was then classified according to type of organization. Examination of the list provided a sample of all types of engineers in proportions representative of the national estimates. The total sample included 3,246 engineers [2,873 (86%) B.S. and M.S., 373 (14%) Ph.D.] from 143 (95%) of 150 organizations listed.

INSTRUMENTATION AND DATA

Three questionnaires were developed. The first questionnaire was designed for the practicing engineer, and investigated six areas: background information, educational history, work history (including present work), professional activities, achievement orientation, and opinions regarding educational and work experience.

The second questionnaire was designed for personnel people, and included composition and function of the engineering force at their company, recruitment procedures, and company training programs.

The third questionnaire was designed for organization people with responsibilities for long-term manpower planning. This questionnaire covered three areas: present and future engineering needs at various levels (B.S., M.S., and Ph.D.), with specific curricular emphases, management training for engineers, and appropriate future emphasis in engineering education.

All three questionnaires were sent out in late 1964 and early 1965.

DESIGN AND ANALYSIS

The responses to the questionnaire items were tabulated, and the results were reported as totals, percents, and trends.

RESULTS AND DISCUSSION

1. The largest proportions of graduate engineers studied in mechanical, electrical, civil, and chemical engineering.
2. The fields of civil, chemical, electrical, and mechanical engineering showed very high percentages of people remained in the same field during employment. Aeronautical and industrial engineering showed a considerable number of people both entering and leaving the fields, although the total numbers in the field remained somewhat constant.
3. The highest percentage of engineers (66%) emphasized engineering science as the major part (over 30%) of their curriculum, followed by 55% of the engineers who included mathematics as over 30% of their program.
4. Eighty-six percent of the engineers were employed by private industry; 35% of these were on government projects.
5. Recent engineering graduates fill higher technical positions than earlier graduates.
6. There was a tendency for M.S. and Ph.D. engineers to be employed in development activities, while no degree differences were found for management functions.
7. Less than half of the starting engineers were in positions with some degree of supervisory responsibility.
8. Academic subjects recommended by the practicing engineers included engineering, sciences, mathematics, English composition, speech, and economics.
9. (Additional and more-specific findings are available in the report of this study.)

COMMENTS

It seems worthy to mention that practicing engineers reported a need for communicative skills. In another study by Perrucci, LeBold, and Howland, recent engineering graduates were reported weak in these skills. A potential engineer may be well advised to pay extra attention to these skills in his preparation.

SATISFACTION AND SUCCESS

120.

Selected Research Findings From a Concurrent and Longitudinal Study of Technical Development Program Participants

Anonymous (1964) Study #3

What are some of the characteristics of high supervisor-rated job performers?

POPULATION AND SAMPLE

The sample included graduates (1963, 1964, and 1965) from a technical development program in a large research and development corporation. The number of participants included 53 from the class of 1963, 49 from the class of 1964, and 55 from the class of 1965. Using the rank-order performance lists, the students were dichotomized into upper and lower halves based on job performance.

INSTRUMENTATION AND DATA

Participants in the technical development program (TDP) were asked to complete an extensive survey dealing with their attitudes toward career goals and values, future job assignments, supervision, and other similar areas. The TDP participants were required to complete a five-hour test battery which included measures of vocational interests, problem-solving ability, creativity, and personality. The tests used were: Graduate Record Examination, the Watson-Glaser Critical Thinking Test, Allport-Vernon Study of Values, Gordon Survey of Interpersonal Values, Edwards Personal Preference Schedule, Strong Vocational Interest Blank, and the Kuder Preference Record.

The participants were also asked each year to react to the program and their current values and aspirations. Information was also collected pertaining to academic success and job performance. (No description of how or what was used to measure academic success and job performance was included in the report of the study.)

The participants were asked to select from a list of nine values and goals the three that they considered to be the most important to them and the three they considered to be of least importance. These values were rated at time of hire and after one and two years of employment with the company.

DESIGN AND ANALYSIS

The responses of the TDP participants were tabulated and compared from year to year. Intercorrelations were determined for the 96 variables obtained from the measures included in the test battery. A factor analysis was completed for the variables.

RESULTS AND DISCUSSION

1. The results for the class of 1964 indicated a decrease, over a two-year period, in the areas of personal pride, being liked by peers, scientific curiosity, and professional accomplishment. There was an increase in the importance of making money, being well thought of by superiors, and competitive spirit.

2. Values and goals of the class of 1963, one, two, and three years after time of employment, showed an increase for importance of personal pride, being liked by peers, professional accomplishment, and social service. There was a decrease in importance of making money, scientific curiosity, and being well-thought-of by superiors.

3. A comparison of the values and goals at the time of hire, for the classes of 1964 and 1965, revealed only minor differences. Personal pride and self-respect were rated as most important to 86% of the 1964 class and 73% of the 1965 class. Only 2% of each class listed "a day's work for a day's pay" as the most important value in their job.

4. Thirteen factors emerged from the factor analysis of the 96 variables. Comparison of performance between the two groups revealed the following factors which described the "upper half": persuasiveness, manual-mechanical, independence, and dominance by achievement. The following factors described the "lower half": support (needs encouragement from other people), affiliation (needs to participate in group activities), aesthetically inclined, interested in social service, and likes to be the center of attention.

COMMENTS

In several instances the findings appear to be overstated; for example, in comparing the goals and values of the TDP class of 1964 at time of hire and after one and two years, a decline was reported in importance of personal pride, being liked by peers, scientific curiosity, and professional accomplishment. The percentages of participants rating scientific curiosity as most important for the three time periods were 45%, 39%, and 44%. Certainly a 1% drop from time of hire to a point two years later cannot be called a decline. Comparing the TDP class of 1964 at three different times, an increase was reported in competitive spirit. Percentages for the three times of measurement were 31%, 38%, and 28%. A 31% to 28% change is not an increase.

The data from the factor analysis are difficult to interpret because of the relatively large number of variables (96) given the number of participants (157). Under these conditions, the 13 factors identified are likely to be unstable. Replication (cross-validation) is an essential step before the factors can be interpreted.

121.

Job Characteristics as Satisfiers and Dissatisfiers

Friedlander, F. (1964)

Do individuals who find certain job characteristics satisfying experience dissatisfaction when these characteristics are not present?

POPULATION AND SAMPLE

"Over half of the 80 subjects (Ss) were full-time employees in a variety of occupations and positions, and were attending an evening course in either industrial psychology or child psychology. The remaining respondents were attending day classes at a college which utilizes a cooperative work program; these latter Ss thus worked and attended college, alternately, for 3-month periods." (No further information was provided to explain how the respondents were selected or the rationale for such selections.)

INSTRUMENTATION AND DATA

Two separate questionnaires were used in the study. One instrument was designed to measure the relative importance of 18 items as the source of job satisfaction: achievement, challenging assignment, recognition, nature of the work, employee benefits, merit increases, working conditions, job security, supervisor competence, etc.

The second instrument measured the importance of the lack of a characteristic as a contributor to job dissatisfaction. Reliabilities for the two measures (satisfaction and dissatisfaction) were computed to be .79 and .72, respectively, using the Kuder-Richardson Formula 20.

DESIGN AND ANALYSIS

The respondents were administered the two instruments one week apart, during regular class meetings.

Analysis of the data involved a test of significance of differences between means of job characteristics as a source of satisfaction and lack of characteristics as a source of dissatisfaction.

Coefficients of correlations between job items as sources of satisfaction and dissatisfaction were computed.

In order to determine which characteristics were the greatest contributors to satisfaction and dissatisfaction, two analyses of variance were run. The first analysis was within the satisfaction means of the 18 items. The second analysis was within the dissatisfaction means of the 18 items.

The Duncan Multiple Range Test was applied to determine where the significant differences lay.

RESULTS AND DISCUSSION

1. For 12 of the 18 items, satisfaction with a job item differed significantly from the dissatisfaction with the lack of the item. This indicates that, for most items, satisfaction and dissatisfaction are not complementary functions. The 12 items were: challenging assignment, recognition, relations with superiors, relations with co-workers, technical supervision, achievement, working conditions, responsibility, security, work itself, work group, and merit increases.

2. Only two significant correlations were found between importance of an item to satisfaction and dissatisfaction. Promotions and repercussions of job on home life were positively related to job satisfaction. This would indicate that few accurate predictions of satisfaction or dissatisfaction could be made from knowledge of a respondent's standing on a specific item.

3. Analysis of variance showed that significant differences existed between items as sources of satisfaction and as sources of dissatisfaction. Achievement, challenging assignment, recognition, and the work itself were identified as being important to both satisfaction and dissatisfaction. Employee benefits, merit increases, and supervisor competence were identified as being unimportant to both satisfaction and dissatisfaction.

COMMENTS

The finding that satisfaction and dissatisfaction are not opposite ends of a single dimension, but are actually different dimensions, may be an artifact of the procedures. The four factors found to be important sources of both satisfaction and dissatisfaction have often been allied to factors related to satisfaction in other studies, and rate as the most important determinants of staying with a company. This is the most important finding.

The incomplete description of the types of occupations of the respondents makes it difficult to determine if the results are products of specific job types and characteristics, or whether these results can be generalized to other populations.

122.

Social Origins, Educational Contexts, and Career Mobility

Perrucci R. and Perucci, C. C. (1967)

What is the impact of social origins upon career success of college graduate engineers?

POPULATION AND SAMPLE

The population included all recipients of Bachelor of Science degrees in engineering from two Pacific Coast universities between the years 1947 and 1961. A sample was drawn at random and stratified to provide 55 graduates from each university for each of the years included in the study. Of the 1,595 engineers, only 1,360 could be located. After receiving questionnaires, 952 (70%) responded and were included in the study.

INSTRUMENTATION AND DATA

The instrument was a questionnaire that covered five areas: socioeconomic status, occupational values, academic achievement, organizational size of the company where the respondent was employed, and success of the respondent in his position.

The responses listed for father's occupation were classified according to Duncan's Socio-Economic Status Index. The Duncan Index uses a prestige rating scale of 0 to 99. Occupations classified 39 and below were termed low; 40 to 69, medium; 70 to 99, high.

Six statements relating to occupational values were rated on a 4-point scale, according to their importance to the respondent. The statements included: (a) Permit me to be creative and original; (b) Provide an opportunity to contribute to basic scientific knowledge; (c) Enable me to look forward to a stable secure future; (d) Give me a sense of job security due to my technical attainments; (e) Provide a chance to earn a good deal of money; and (f) Give me social status and prestige.

Two measures of academic achievement were used. The first was the index for the last two years of undergraduate work. The second was classification of respondents by highest degree received. A bachelor's degree, with or without graduate work, was classified as low. A master's degree or higher was classified as high. The validity of self-reported grades was checked against registrar's records for a subsample of 180 graduates. The correlation of self-reported grades and college records was .86.

Two indices of organizational size were used. The first index was based on the total number of employees in the organization. The second index considered only the number of persons in the immediate engineering group of respondents. The dividing line between large and small for company size was 5,000. Ten was set as the dividing line between large and small for the engineering group.

"Five different measures of success were used:

namely, two salary measures, degree of technical responsibility, degree of supervisory responsibility, and extent of participation in professional activities." The two salary measures were average monthly salary for 1962, and gross annual salary for 1961.

DESIGN AND ANALYSIS

Fifty two-factor analyses of covariance were used to determine the relative importance of social origins, academic achievement, occupational values, and organizational size to success in engineering. The effects of work experience were partialed out. "These fifty analyses are viewed as 10 sets of five ANOCOV problems, with social origins as one of the two classification variables, length of work experience as covariate, and five measures of success in engineering as variates. The second classification variable was one of the 10 measures of academic achievement, values, and organizational size. For each ANOCOV, individual "F" tests for differences between adjusted variate means were computed."

RESULTS AND DISCUSSION

1. No evidence was found to indicate a significant relationship between level of social origin and success in engineering.
2. Several notable patterns of interaction effects between social origin and occupational values were observed. Security values showed definite negative, but unequal, effects on job success across the three levels of social origin; for example, engineers from the middle level of social origin, who subscribed to security values, experienced a higher degree of success than engineers from either the upper or lower level of social origin, who also subscribed to security values.
3. Interaction effects also were noted between social origin and creativity, social origin and money value, and social origin and status value. "The general pattern, with respect to interaction effects, is that occupational values make a statistically significant contribution to success, but this contribution is 'uneven' across all levels of social origins."
4. There was a significant difference between the success of engineers employed by large and small companies. Engineers in larger companies held positions of greater responsibility than engineers in smaller companies. No differences were found in the success between engineers, when compared in terms of work group size.
5. A significant difference was found between the high and low education groups, in terms of participation in professional activities. The high group participated in significantly more activities. This finding held true for the lower and higher social origin groups, but not for the middle.
6. No relationship was found between college grades and either of the two salary success criteria.
7. High college grades were related with higher level of technical responsibility in the high social origin group only.
8. College grades were related to participation in professional activities for the high and low social origin groups only.
9. Contrary to the finding of a previous study using midwestern university engineering graduates, there was no significant relationship between social origin and success. Three hypotheses were listed in an effort to explain or account for this discrepancy. The hypotheses all dealt with the actual, or perceived, lower quality of the midwestern university graduates, and the high concentration of Pacific Coast university graduates in aerospace and electronics firms in California. An analysis of the selectivity of the schools attended by a national sample of 4,000 engineering graduates showed no correlation between selectivity of the school and success.

COMMENTS

Due to the limited sample, generalization of the results may be restricted. The fact that these results are inconsistent with results using other student groups suggests that caution in interpretation is needed.

123.

Intrinsic and Extrinsic Factors in Job Satisfaction

Wernimont, P. F. (1966)

How reliable are Herzberg's findings that job related factors determine job satisfaction, and job environment factors determine job dissatisfaction?

POPULATION AND SAMPLE

The sample included 50 accountants and 82 engineers from various midwestern companies. The companies represented manufacturing, milling, banking, and retailing, (No explanation of how the sample was identified or selected was included in the report of the study.)

INSTRUMENTATION AND DATA

The data were collected using a modified forced-choice technique. Pairs of job-attitude items were constructed to reflect differing degrees of satisfaction. The item pairs were divided into five categories, on the basis of degree of satisfaction. The categories were: highly positive, slightly positive, neutral, slightly negative, and highly negative.

The intrinsic factors identified in Herzberg's results were: recognition, achievement, work itself, advancement, and responsibility. The extrinsic factors were: salary, company policies, technical competence, interpersonal relations, and working conditions. Items from each of the intrinsic factors were matched with items from the extrinsic factors, so a choice could be made between them.

Thus, 5 (level of satisfaction, within each of the 10 factors) x 5 (number of intrinsic factors) x5 (number of extrinsic factors), or 125 pairs of statements were possible and obtained.

Ten sets of item pairs were then constructed (five positive and five negative). With each positive set, there were five pairs of highly positive items, 15 pairs of slightly positive items, and 5 pairs of neutral items. Each negative set contained 5 pairs of highly negative items, 15 pairs of slightly negative items, and 5 pairs of neutral items. Two of the positive and two of the negative sets were selected to be in the forced-choice instrument.

The instrument then contained 50 positive item pairs and 50 negative item pairs. Each individual was asked to describe a personal experience in his job that had made him happy with his job. He was then asked to check the item or statement from each of the 50 pairs of positive items (or statements) which best described his reactions to the situation. The same procedure was followed using a negative, or unhappy, experience and the negative items.

DESIGN AND ANALYSIS

Four hypotheses were tested in the study.

Hypothesis 1—"The proportion of intrinsic item endorsements is greater than the proportion of extrinsic item endorsements, when persons describe a time in which they felt exceptionally satisfied on their jobs."

Hypothesis 2—"The proportion of intrinsic item endorsements is less than the proportion of extrinsic item endorsements, when persons describe a time in which they felt exceptionally dissatisfied on their jobs."

Hypothesis 3—"The proportion of intrinsic item endorsements by persons when describing a time in which they felt exceptionally satisfied on their jobs is greater than the proportion of intrinsic item endorsements by persons when describing a time in which they felt exceptionally dissatisfied on their jobs."

Hypothesis 4—"The proportion of extrinsic item endorsements by persons when describing a time in which they felt exceptionally dissatisfied on their jobs is greater than the proportion of extrinsic item endorsements by persons when describing a time in which they felt exceptionally satisfied on their jobs."

The proportions of individuals responding in a given manner to the items were determined. Significance of the differences between proportions was tested.

Rank-order correlations among the job factor means for the accountants, engineers, and Herzberg's sample were computed.

RESULTS AND DISCUSSION

1. Hypothesis 1 was accepted for both occupational groups. Both selected a higher proportion of intrinsic items when describing a situation which satisfied them in their work.
2. Hypothesis 2 was rejected for both groups. A larger proportion of intrinsic items was also endorsed when the individuals were describing dissatisfying situations.
3. "Hypotheses 3 and 4 were accepted for the accountant sample, but rejected for the engineering sample." For both groups, there was very little difference between the proportions of either intrinsic or extrinsic items selected in describing satisfying and dissatisfying situations.
4. The two sample groups in this study (engineers and accountants) placed similar importance on individual job factors, in describing dissatisfying situations. These results were not consistent with the findings of the Herzberg study.
5. All three groups (including Herzberg's sample) placed the same relative importance on individual job factors, in describing satisfying job situations.

Summarizing the author's discussion, "satisfaction with the job can be due to high levels of satisfaction with intrinsic factors, and dissatisfaction can be due to low levels of satisfaction with intrinsic factors. Extrinsic factors cause both satisfaction and dissatisfaction less readily than do the intrinsic factors."

COMMENTS

Several other findings were reported by the author, but they appeared to be somewhat unrelated to the hypotheses and of minor importance in the study. It is difficult to know how much confidence to place in the findings, since they do, in part, disagree with a previous study, and not much is known about the sample used in this study. The finding that intrinsic factors are more important determinants of job satisfaction than extrinsic factors is consistent with several studies and may be an important finding to consider in the modification of work situations to decrease attrition.

EMPLOYMENT

124.

College Seniors' Plans and Their Implementation

Bateman, T. and Roe, A. (1966)

To what extent are occupational plans of college seniors related to their actual employment experiences five years after graduation?

POPULATION AND SAMPLE

The sample included 127 Harvard graduates of the class of 1960. The participants were part of a group of 145 graduates who had taken part in another study by Roe and Siegelman (1964) dealing with the origin and development of interests. The original sample was selected with the intent of making it more representative of the national college population than the specific Harvard community, in terms of the distribution of public and private school students. An attempt was made to include students with a wide range of interests and from diverse fields of preparation at Harvard. (No explanation of the techniques used in selection was provided in the report of the study.)

INSTRUMENTATION AND DATA

In October 1965, a questionnaire was sent to each graduate contained in the original sample. It asked him to report on his activities during the five years since graduation, including: graduate school, military, marital status, family, and others. Another part of the questionnaire asked the graduate to describe his future career plans.

DESIGN AND ANALYSIS

Comparisons were made between the responding sample and the original sample, in terms of college majors.

A second comparison was made between the activities of the responding sample during the first year following graduation and the immediate plans of the entire class of 1960. These two groups were also compared by percentages in each group in graduate studies.

Comparisons were made between career plans expressed by the participants in 1965 and the plans they had expressed in 1960 as college seniors.

RESULTS AND DISCUSSION

1. The results showed that the response sample was different from the original sample only in the number of government majors.
2. There were no differences between the activities of the responding sample during the first year following graduation and the plans of the entire class of 1960.
3. By 1965, 112 (88.1%) of the responding sample had done graduate work, compared to approximately 86% of the total class who had planned to do so.
4. Results showed that 83 (68%) of the responding sample did not change their career plans between 1960 and 1965.
5. Actual activity comparisons showed that 89 (70%) of the sample were actively engaged in an occupation in 1965, 67 (77%) in the career they had planned.
6. Of the 39 respondents who had different plans, only 20 (51.2%) were actively engaged in their new choice, indicating that the change took them longer to finish school.

COMMENTS

Lack of information about the sampling techniques makes it difficult to judge the success in obtaining a representative sample. It is questionable whether a sample representative of the national college population could be obtained only from Harvard.

The stability of interests of the subjects may be a product of their academic background, the rigor of the Harvard curriculum, or many other things which make it difficult to generalize these results beyond the population of Harvard students.

125.

Work Motivation of Women College Graduates: Five Year Follow-Up

Eyde, L. D. (1968)

How stable are women college graduates on commitment to paid employment and personal reasons for desiring work outside the home?

POPULATION AND SAMPLE

The population was defined as the women who graduated from Jackson College in 1953 and 1958.

The population was tested for their work motivation initially in 1958, and a follow-up questionnaire sent in 1963 to each graduate who responded originally. Fifty-one graduates from the class of 1953 and 55 graduates from the class of 1958 returned the 1963 questionnaire. The sample represented about 80% of the original respondents and about 50% of the population. Comparison between the initial work values of those who did and did not respond to the 1963 questionnaire showed no significant differences between the groups.

INSTRUMENTATION AND DATA

The graduates responded to two scales designed by the author of this study. The two scales were the Desire to Work scale (measure of commitment to work) and Ranked Work Value scale (measure of reasons why women work for pay). The Desire to Work scale contained 20 items describing the respondent's commitment to work under varying conditions, such as marital status, adequacy of spouse's income, age of children, etc.

The Ranked Work Value scale contained six work value factors: dominance, economic, independence, interesting, achievement, and social. "The respondents ranked 14 sets of 6 items in which the social desirability levels of the items were controlled in each set."

DESIGN AND ANALYSIS

"For each group of women, retest scores were correlated with earlier scores. For the work-commitment measure and for each work value, differences between mean scores for the two groups were tested for statistical significance."

RESULTS AND DISCUSSION

1. Commitment to paid employment for the 1953 group correlated .80 (test-retest scores after five years).
2. Commitment to paid employment for the 1958 group correlated .45. The difference between the 1953 and 1958 groups may be explained by the change in demographic factors, such as marriage, children, etc. At the time of the first testing, only 6% of the 1958 group were married, compared to 78% of the 1953 group.
3. The two groups did not differ significantly in work commitment, either on the initial or follow-up test scores.
4. All but one of the test-retest correlations for work value were significant, indicating a stability of values over the five-year period. The only correlation that was not significant was for the factor interesting (variety).
5. Employers and graduate schools seeking women with strong career commitments might find it useful to evaluate the work motivation of applicants.

COMMENTS

The author's suggestion to employers and graduate schools has real merit. Companies interested in career-oriented people seek permanence in their employees. If a measure of work motivation can, in fact, identify people who are more committed or motivated professionally, it would be worth while for employers to use such instruments.

126.

Some Effects of Experience on Orientations Toward Work

Moment, D. (1966)

What are the longitudinal effects of work experience on attitudes and work orientations?

POPULATION AND SAMPLE

"The findings reported here were taken from analyses of 127 bank officers and 108 department store managers, with regard to job and age groupings; from 127 bank officers, but only 68 department store managers, with regard to performance level groupings; and from 96 alumni of the Graduate School of Business Administration at Harvard University." Groupings were made on the basis of age, job, and performance level. Age and performance level groupings divided each sample into thirds. (The report of the study gave no explanation of sampling techniques.)

INSTRUMENTATION AND DATA

"Orientations toward work were inferred from four questionnaire items, some of which were completed by all three groups of subjects: 1. The qualities of an ideal job ('career values'); 2. Willingness to leave the geographic region to work elsewhere; 3. The profession, the field of work, the company, or certain individuals as objects of loyalty in the department store jobs; and 4. Career metaphor: the view of work as activities or as an achievement ladder."

An occupational values item asked the participants to rank eight factors, by importance, for an ideal job. The factors included: work with people, interesting work, intellectual problem-solving, accomplishment, helpful to others, security, free from supervision, and opportunity to be creative.

DESIGN AND ANALYSIS

"The analyses of groups, along the three dimensions of job, age, and effectiveness, allowed nonlinear as well as linear relationships to be discovered. Intercorrelation matrices were also used for the bank and store data. For economy in presentation, correlations will be mentioned for linear relationships, while the results of the *t* test for differences between group means will be used in the discussion of nonlinear relationships."

RESULTS AND DISCUSSION

Many significant *t* tests were observed, comparing the three groups on career rankings. Since these differences were numerous, it is suggested that direct reference be made to the report of the study.

COMMENTS

The description of the statistical procedures used was neither clear nor complete in the report of the study. It appears as though a series of *t* tests were used. If this was the case, it was an inappropriate procedure. As previously noted, the differences found were numerous. In addition, they were difficult to interpret.

127.

Relationship Between Job Satisfaction and Job Involvement

Weissenberg, P. and Gruenfeld, L. W. (1968)

Is the degree of job satisfaction an individual experiences related to his degree of job involvement or commitment?

POPULATION AND SAMPLE

The sample included 96 male supervisors in government agencies. "They ranked from first-line supervisors (G17) to the highest nonappointive position in the department, the executive director (G38)." Their salaries ranged from $7,700 to $17,300; they supervised from 0 to 18 persons; and their educational level ranged from 12 to 18 years.

INSTRUMENTATION AND DATA

The instruments used in the study were the Wernimont Job Satisfaction Scale and the Job Involvement Scale. The Job Satisfaction Scale measures the degree of job satisfaction in specific areas of job responsibilities, as well as an over-all job satisfaction score, ranging from 1 to 9 (9 indicates highest job satisfaction).

The Job Involvement Scale included six items selected from an earlier list of 20. The correlation between the 6-item scale and the 20-item scale was reported to be .87. The first five items of the short form were scored using a 4-point scale, ranging from 1 (strongly agree) to 4 (strongly disagree). The sixth item was scored in reverse; i.e., the higher the job involvement score, the lower the degree of involvement.

DESIGN AND ANALYSIS

Correlations were computed between job satisfaction and job involvement scores. Tests of significance were applied.

The hypothesis tested was that "satisfaction with motivator sources will be related to increased job involvement, but satisfaction with hygiene sources will be unrelated to job involvement."

Motivators included recognition, achievement, advancement, responsibility, and work. Hygiene conditions were defined as those conditions which prevented unhealthy psychological work conditions, such as peer interpersonal relations, working conditions, etc.

RESULTS AND DISCUSSION

1. Job involvement correlated at a significant level to satisfaction with recognition (.05), achievement (.05), and responsibility (.01). "These results confirm the hypothesis. . ."
2. As predicted in the hypothesis, job involvement was found to be unrelated to all but one of the hygiene variables. A significant relationship (.05) was found between interpersonal relations with superiors and job involvement.
3. Over-all satisfaction was found to be significantly related (.01) to the total scores of both the motivators and the hygiene variables. Correlations were .70 and .60, respectively.
4. "It therefore appears that the distinction between motivator and hygiene variables introduced by Herzberg. . .can be useful in predicting the job involvement of civil service supervisors."

COMMENTS

These results may also be generalized to supervisors outside of civil service, since the nature of the sample does not appear to be a critical factor in this type of study.

The relationship of job satisfaction and job involvement, as found when the job satisfaction variables are recognition-oriented, is consistent with other studies. It appears that companies would do well to spend more energy and money on setting up reward systems for employees than is presently the case. The weakness of hygiene variables as predictors of job involvement, suggests that the existing emphases on employee benefits and relations may not be resulting in the desired outcomes.

The Career Planning and Placement Center

CAREER CHOICE, PLANNING, DEVELOPMENT

OCCUPATIONAL INFORMATION

128.

Student Opinion on the Location of Occupational Information on a University Campus

LeMay, M. L. and Warnath, C. F. (1967)

Where should occupational and career information be displayed on a university campus to be of general value to students other than clients?

POPULATION AND SAMPLE

The sample consisted of 440 students at Oregon State University. There were 265 (10% of 2,655) students living in residence halls during the 1964-65 spring term, and 175 (7% of 2,504) students living in fraternities, sororities, and cooperative houses. (The method used for selecting the students was not specified in the report of the study.)

INSTRUMENTATION AND DATA

A short, one-page questionnaire was designed to determine a student's knowledge of the available occupational information resources on campus, and to learn his preference regarding the location of an occupational library on the campus.

DESIGN AND ANALYSIS

Results of the questionnaire were tabulated and compared in terms of percentages.

RESULTS AND DISCUSSION

1. A majority of the students had little or no knowledge of the occupational information resources available to them.
2. The majority indicated a need for occupational information during their college career.
3. The responses indicated that the student union was the most popular location for an occupational library; the university library was the next preference. The counseling center was listed as one of the least desired locations.

COMMENTS

The extent to which the results of this study can be generalized to other institutions is difficult to judge. However, the finding that students report a need for occupational information, but don't feel that the counseling center (where such information is usually available) is a desirable place to seek it out, may have important implications for many colleges and universities.

GUIDANCE AND COUNSELING

129.

Career Development Concepts: Significance and Utility

Bailey, J. A. (1968)

What are the counseling goals within the vocational aspects of guidance? If these goals are conceptual understandings, which concepts are of high importance to the counselor and student?

Should the acquisition of the important understandings be the criterion for evaluating the degree of effectiveness of career development efforts?

POPULATION AND SAMPLE

The sample included 20 local counselors and personnel workers (M.S. degree and a minimum of one year's experience) and 24 experts (professionals elected by their peers) representing the National Vocational Guidance Association, the National Employment Counselors Association, the American School Counselors Association, and the American Vocation Association. These 44 persons are referred to as judges in this study.

INSTRUMENTATION AND DATA

The 20 local judges selected 10 career development understandings in each of 4 categories: psychological, sociological, economical, and general. Selections were made from a list of 240 career development statements, based on the number of judges selecting that item.

The 24 expert judges were given lists of 40 random-order statements. Their task was to sort the 40 statements into four equal groups, ranking them by their importance.

A value was given to each of the four groups, with the lowest value representing the most important statement. Four measurements were made for each of the statements: (a) ranking of relative importance to other statements, (b) category of the statement, (c) mean value (scores from all judges divided by 24), (d) judges' consistency in placing the item.

DESIGN AND ANALYSIS

Rank-order correlations were determined for order of presentation and rank, and inter-judge rankings.

RESULTS AND DISCUSSION

1. Agreement within categories appears greatest within sociological items, and least within psychological items.
2. The relationships of rankings for each item by the expert judges ranged from .86 to .59, quite high considering the homogeneity of the statements ranked.
3. There was no relationship between presentation order and rank. There was a slight tendency (rho –.23) for longer statements to be given a high value.

COMMENTS

Would the validity of the results be increased by replacing the local judges with other expert judges? No rationale was given by the author as to why local judges were used in selecting the important concepts in vocational guidance. Were the concepts selected by the local judges the important ones as seen by the expert judges?

130.

The Use of Preliminary Information in Vocational Counseling

Norman, R. P. (1969)

Is it possible for certain types of counseling, or parts of counseling, to be programmed, automated, or otherwise handled more effectively by mechanical or self-help devices?

POPULATION AND SAMPLE

The study included 121 students who sought vocational guidance at William and Mary College. (There was no further description of the sample provided in the report of the study.)

INSTRUMENTATION AND DATA

The instruments used were: (a) audio presentation (tape recordings) of counseling information requested by the client, and (b) video presentation (mimeographed take-home sheets) of counseling information requested by the client.

DESIGN AND ANALYSIS

The students were divided equally into four groups. Each group received the preliminary counseling information they requested, via different methods of presentation: audio, video, and audio-video. The control group received no preliminary information other than an appointment with a counselor. If the students still had questions that were not completely answered by the preliminary information, they were offered an appointment with a counselor.

The return visits to the counselors by each student group were recorded and tabulated. The purposes for these visits were also recorded. The amount of counseling time required by each group to handle all problems was totaled and compared.

RESULTS AND DISCUSSION

1. The students receiving the video method of presentation returned for fewer counseling sessions, suggesting this to be the most effective means of supplying the information requested by the client.
2. The data raise the possibility that the reasons students return for counseling may include: the nature of their problem, the urgency of their problem, class standing, and method of presentation of preliminary information.
3. Sophomores and seniors returned for counseling more often than either freshmen or juniors. This may be due to graduation for the seniors and the school requirement of choice of college major by the sophomore year.

COMMENTS

The results of this study, although inconclusive, suggest that mechanical methods may be used to provide general types of information effectively. If this is true, then much of the counselor's time can be freed for the more important and urgent problems.

The nature of the problem which caused the students to return for further counseling was not explained in the results of the study.

TESTING

131.

Interest Stability and the Interpretable Change Criterion

Apostal, R. A. (1966)

Are vocational interests of college students stable?

POPULATION AND SAMPLE

The sample consisted of 130 out of 183 seniors in the College of Technology at the University of Maine. These were students who had taken the SVIB as part of their admissions procedures four years earlier. (The dates of sampling were not provided in the report of the study.)

INSTRUMENTATION AND DATA

The SVIB was administered twice to each student. Scores from the first administration of the SVIB during admissions procedures were called "before," and scores from the second administration of the test during the final semester of the students' senior year were called "after."

Interpretation of the SVIB involves letter categories; i.e., similar letter scores imply similarity of interests. It is possible to have statistically significant differences between "before" and "after" mean scores and still have no differences in terms of meaning.

DESIGN AND ANALYSIS

The "before" and "after" scores for each student on each of the 45 occupational scales were analyzed using the *t* test.

An additional analysis was made of the scales which showed a significant difference to determine if they also differed in meaning. This procedure, called interpretable change, "was defined as a statistically significant change of interest from one interest category to another." The interest categories were: dissimilar (C and C+ letters), intermediate (B– and B letters), and similar (B+ and A letters). When several shifts of interest occurred over a four-year period, the interest was considered to be less stable. When a fewer number of shifts occurred, the stability of interest was considered to be greater.

RESULTS AND DISCUSSION

1. A statistically significant difference (.01 level) was found between "before" and "after" mean scores on 29 of the 45 occupational scales. (A list of the significant scales was not provided in the report of the study.) Such results do not seem to support the assumption of interest stability.
2. Of the 29 significantly different occupational scales, only six yielded an interpretable change. None of the six changes were from similar to dissimilar or vice versa.
3. Other investigators have attempted to predict interest stability in a variety of ways. According to the author, this was the first attempt using similarity and dissimilarity of interests as the criterion.
4. The data suggest that the changes in interest that develop over four years of college education are not meaningful changes in terms of similarity or dissimilarity of interests of students in their chosen careers.

COMMENTS

Other studies have indicated that college work does have an influence on the interests of students. At first glance, this study appears to support that contention. However, the addition of a criterion of meaning or interpretability of these changes greatly altered the number of significant changes. It could be asked how many of the previously found changes in interests which were statistically significant would survive if a criterion of practical significance were applied?

132.

Relationship Between Measures of Identification and Vocational Interests

Ball, M. K. and Russell, D. L. (1965)

What is the relationship between measures of identification and vocational interests?

POPULATION AND SAMPLE

The sample included 135 college males, aged 17 through 20, who had lived with both of their natural parents from birth until the end of secondary school, and whose parents were still living at the time of the study.

INSTRUMENTATION AND DATA

The instruments used in the study were the Kuder Preference Record—Vocational (KPR), a bipolar graphic Occupational Rating Scale (ORS), the Semantic Differential (SD) scales, and a personal information form.

The ORS was used to obtain measures of occupational interest similar to those in the KPR. The students were asked to rate themselves and an identification figure (IF) in terms of like or dislike for each of 10 areas of interest. The IF was defined as the person most influential in helping the student determine his vocational preferences and interests (father, mother, other). "Directional discrepancy scores were determined for each area and each identification figure, by subtracting the IF rating from the self-rating." The absolute discrepancy score was a total for all interest areas combined.

The SD scales were used to develop a second index of identification.

"Each S completed the personal information form, the SD, ORS, and KPR at the same time in fixed order, and 55 Ss were tested again one month later to assess the reliability of the scales. (Test-retest reliability in the 10 interest areas of the ORS ranged from .43 to .86. Similar correlations of .60 to .80 were found for the SD.)

DESIGN AND ANALYSIS

"High and low identification groups were distinguished for the SD and the ORS. . . The high identification group on the ORS was formed by including those with 0 to ±2 discrepancy scores. This high group was further divided into subgroups which showed low, middle, and high ratings."

High or low identification was determined using SD scales by dividing the distribution of absolute discrepancy scores at the median.

Three hypotheses were tested:

Hypothesis 1— ". . .persons expressing low identification, or conflict, with significant figures would tend to show less extreme measured interests than those showing high identification."

Hypothesis 2— ". . .significant figures may differ in the strength of identification they attract."

Hypothesis 3— "The third hypothesis dealt with a comparison of two indices of identification based upon self-other rating confruence (sic) using the semantic-differential technique and occupational rating scales."

Hypothesis 1 was tested using analysis of variance comparing the mean ORS scores of the high and low identification groups for the 3 IF's in each of the 10 interest areas. "Turning to the SD scales, chi-square contingency tests were made comparing high and low identification groups for high, middle, and low KPR measures. . ."

Hypothesis 2 was tested using Cochran's Q Test in comparing the relative frequencies of father, mother, and other in the high identification group.

Hypothesis 3 was tested using chi-square four-fold contingency tests to compare the frequency of students in the high and low identification groups on the ORS and SD.

RESULTS AND DISCUSSION

1. "The prediction that conflict of identification would be associated with less extreme KPR measures was decisively not confirmed."

2. Sons identified more often with fathers and other male IF's. Only 35 students listed females as other IF's. Forty-three of the other IF's were teachers, 42 were relatives.

3. "Significant and positive association was obtained with mother in the artistic area; with father in persuasive, outdoor, and social-service areas; and "other" as IF in the mechanical area."

COMMENTS

The description of the sample and sampling techniques was inadequate in the report of the study. The nature of the sample would determine the ability to generalize about the results.

Caution should be exercised in using several measures, all requiring a self-response or self-rating.

133.

Relation of Occupational Choice to the Similarity Between Self-Ratings and Occupational Ratings

Healy, C. C. (1968)

Can the similarity between self-ratings and occupational ratings on the same traits be used as a valid predictor of occupational choice?

POPULATION AND SAMPLE

The sample consisted of 147 males at the University of Florida who were paid to participate in this study. The students were distributed through six academic areas: medicine (30), graduate accounting (20), graduate engineering (25), premedical (19), undergraduate accounting (18), and undergraduate engineering (35). The sample represented a combined total of 500 students in these academic areas.

All undergraduates had completed at least 60 credits at the time of the study. About 20% of the sample indicated they would not practice in the profession they were studying. Graduate accounting showed the only disproportionate number of students who were not going to practice in their profession. About 40% of the accountants said they were going to teach accounting. Those planning to teach accounting were not significantly different from the practitioners, in terms of similarity between self-ratings and occupational ratings, when rated on identical traits (incorporation scores).

INSTRUMENTATION AND DATA

"Subjects used 7-point semantic differential scales to rate themselves and the roles of physician, accountant, and engineer on 25 bipolar occupationally relevant traits (ORT) and on the 22 bipolar personality traits elicited by a modified Kelly Role Construct Repertory Test (RCRT)." The undergraduates completed the Strong Vocational Interest Blank (SVIB).

Incorporation scores based on RCRT traits and incorporation scores based on ORT traits were computed for each of the three occupations, giving each student six incorporation scores. An incorporation score was computed by totaling the differences between self-ratings and occupational ratings (without regard for direction) and subtracting the sum from 100.

DESIGN AND ANALYSIS

Analysis of variance was used to determine if students in the three academic areas were differentiated by incorporation scores and if graduates and undergraduates could be differentiated on the basis of incorporation scores.

Correlations were determined to study the relationships of different incorporation scores, relation of incorporation score to academic grades, and the relation of incorporation scores to SVIB scores.

Four hypotheses were tested. Hypothesis 1—curricular groups can be differentiated by their incorporation scores for specific professions.

Hypothesis 2—Graduate students' incorporation scores will be higher than undergraduates' incorporation scores.

Hypothesis 3—Students studying for a profession will have higher incorporation scores for that profession than for other professions.

Hypothesis 4—Incorporation scores for a profession are related to grades in professional courses.

RESULTS AND DISCUSSION

1. RCRT and ORT scores for physician and accountant differentiated the curricular groups at the .01 level. Physicians and accountants had significantly higher scores for their profession than for other professions on both the RCRT and ORT (.05). Hypothesis 1 was accepted for physicians and accountants. Engineers were not differentiated by either RCRT or ORT scores—their incorporation scores did not differ significantly across the three professions.

2. Graduates did not have higher incorporation scores than undergraduates for their profession. Hypothesis 2 was rejected.

3. Hypothesis 3 was accepted. Students studying for a profession scored higher for that profession than any other. This was found to be true for both graduates and undergraduates.

4. No consistent direction was found in the correlations of incorporation scores to grades (24 positive, 23 negative, and 1 no correlation).

5. The findings suggest that incorporation scores are not refined predictors of occupational choice. (It is a lack of refinement, rather than lack of validity, because the parts of the hypotheses that were accepted were more relevant to the question.)

COMMENTS

As suggested by the author, the hypotheses were partially accepted. In particular, those hypotheses most important to the question of the possible usefulness of incorporation scores in predicting occupational choice were accepted. The importance of predicting occupational choice suggests the need to refine the ideas and measures of this study and replicate them. In particular, the use of paid students should be avoided. It appears profitable to use a wider range of vocations than the three used in this study.

134.

The Predictive Value of a Student's Choice of Vocation

Holland, J. L. and Lutz, S. W. (1968)

Can a student's expressed vocational choice during his first year of college be relied upon as a predictor of his final vocational choice?

POPULATION AND SAMPLE

Students were selected in two surveys of college freshmen conducted in the spring and fall of 1964. The spring sample was taken from eight colleges and universities in various sections of the country. The fall sample was selected from 22 colleges and universities representing all sections of the country. Both samples contained a wide range of scholastic potential, vocational interest, and socioeconomic status.

INSTRUMENTATION AND DATA

Two instruments were used: the Vocational Preference Inventory (VPI), and Holland's six category classification system which was used to categorize occupations (realistic, intellectual, social, conventional, enterprising, and artistic).

DESIGN AND ANALYSIS

Students were polled for their vocational choices, then given the VPI. Eight to 12 months later, all students were again polled to determine changes, if any, in their vocational preferences. Results were tabulated and tables constructed showing first vocational choices compared to second and final choices. The predictive validity of the VPI was determined using high-point codes.

RESULTS AND DISCUSSION

(Predictions were measured in terms of matched responses; i.e., first choice being the same as final choice.)

1. Percent of correct predictions of student's final choice (polled) from first choice (polled) was significantly higher than when using VPI scores.
2. By using polled first and second vocational choices, an even higher percent of correct predictions of the students' final choices was obtained.

The authors raised three significant questions pertaining to their study: (a) Would similar results be obtained by using well-established inventories? (b) Is the classification system valid for the purposes of the counselor? (c) Would similar results be obtained over longer periods of time?

COMMENTS

The predictive validity of vocational preference or choice has not been demonstrated in this study. What has been demonstrated is that students were consistent in their stated preferences over a short period of time. What will the students actually choose for a vocation?

Campbell, D. P. Comments, *Personnel and Guidance Journal*, 1968, 46 (1), 434-436:

1. "This work can be dismissed rather easily as irrelevant to the question he has posed, for he has never dealt with what the person actually does."

The students were asked to state their career choices. They were then given the Vocational Preference Inventory. Approximately 8 to 12 months later, they were again asked to state their present career choices. The second choice was then used as the criterion to evaluate the efficiency of the first stated choice against the inventory.

"There has been no attempt whatsoever to determine if expressed choice has any validity; a student could select any wild-eyed choice, repeat it in the spring, and that—in Holland's analysis—would be perfect prediction."

2. Holland restricted the responses of the students to a 99-item checklist. This is certainly not the number of possible choices that could be collected by most expressed-choice formats, which is what Holland said he used.

"A 99-item checklist is an artificial creation also, and whatever deficiencies inventories have in mirroring a student's aspirations are certainly shared by this checklist."

3. "Holland has made a useful contribution with his classification system. His six types have been carefully worked out; they have the appeal of simplicity and the power of being based on established psychological knowledge."

135.

Changes in the Vocational Plans of College Students: Orderly or Random?

Holland, J. L. and Whitney, D. R. (1968)

Are the changes in the vocational plans of college students predictable or random?

POPULATION AND SAMPLE

Students were gathered in two college samples, drawn September 1964 and May 1965. The September sample included 3,147 students from six colleges and universities. These students were polled for their occupational choices in September, and again eight months later, in May 1965. The second sample of 5,129 students, drawn in May 1964, was selected from 28 colleges and universities. They were polled for their vocational choice at the time of selection, and again 12 months later, in May 1965. Both samples included students with a wide range of scholastic potential, vocational interests, and socioeconomic status.

INSTRUMENTATION AND DATA

The instrument used was the Vocational Preference Inventory (VPI). The VPI contains six categories of vocational choice for men: realistic, intellectual, social, conventional, enterprising, and artistic. For women, the VPI has seven categories: intellectual, social-intellectual, social-conventional, social-enterprising, social-artistic, conventional, and artistic. Each of 99 occupations was coded according to the major category of the occupation and two secondary categories; for example, physicist was primarily intellectual, and secondarily realistic and artistic. Physicist was, therefore, coded according to the three categories, IRA. The students selected their career choices from the coded list of 99 occupations.

DESIGN AND ANALYSIS

The students from the two samples were combined and treated separately, according to sex.

Tables were constructed comparing each student's initial vocational choice with his final choice expressed 8 to 12 months later. Results were reported in terms of totals and percentages.

RESULTS AND DISCUSSION

1. The results showed that 50% of the students expressed the same occupational choice each time. The remaining 50% showed varying degrees of similarity between choices: 4%, same secondary categories; 6%, same major category and related secondary categories; 9%, same major category only; 6% closely related major category; and the remaining were either undecided or unclassifiable.
2. The results for women paralleled those for men, except 60% selected the same occupation on both occasions.
3. The conclusions were that the vocational choices of college students were both orderly and predictable, but that more research was needed using longer periods of time between measures.

COMMENTS

The authors are dealing with stated choices which may or may not reflect the student's actual choice when initially employed. The finding that students' statements of vocational choice do not change in a random fashion during the course of a year, or less, is not surprising. The question of whether or not one can predict the occurrence of change, or the nature of change, in individuals was not answered by this study. The observation that the changes do not occur randomly (that is, that the new choices, when they occur, are related to the previous choices) does not allow the prediction of when changes will occur or what the nature of the changes will be.

136.

Personality Characteristics and Vocational Identification

Irvin, F. S. (1968)

Do artists and architects score significantly differently on the Sentence Completion Test (a measure of personality)?

POPULATION AND SAMPLE

The study concerned two groups of students at the University of Illinois at Chicago—artists and architects. The artist group included 20 students enrolled in an art curriculum. All had standard scores of 40, or better, on the Artist scale of the Strong Vocational Interest Blank (SVIB) for Men. The architect group included 20 students enrolled in an architecture curriculum. All had standard scores of 25, or below, on the Artist scale of the SVIB. The Artist scale was used since it distinguishes between the two groups much better than the Architect scale of the SVIB.

The two groups were compared in terms of age, sex, and scholastic aptitude. All differences were found to be insignificant.

INSTRUMENTATION AND DATA

The Sentence Completion Test (SCT) was used to measure the personality characteristics of the students. The SCT is composed of 35 items designed to obtain partially structured responses that can be classified into one of five behavioral contexts relevant to college students: self-concept, parental attitude, peer attitude, need for achievement, and learning attitude.

Each response was given a value on a scale ranging from 1 (highly positive) to 5 (highly negative).

DESIGN AND ANALYSIS

The completed instruments were scored independently by two psychologists. (Inter-judge agreement was obtained for 87% of the items.)

One-tailed *t* test of significance was used. Only those responses scored as positive or negative were included for statistical analysis.

Five hypotheses were tested: Hypothesis 1—Artists will view themselves as being more isolated than will the architects.

Hypothesis 2—Art students will show more negative reaction to their parents than will architecture students.

Hypothesis 3—Architects will show more acceptance of peers than artists.

Hypothesis 4—Architects will show more need for achievement than artists.

Hypothesis 5—Architects will show more enthusiasm for going to school than artists.

RESULTS AND DISCUSSION

1. Artists' responses on the self-concept items were significantly more negative than the architects' responses.
2. Artists tended to react with hostility toward parents and family situation. Architects responded positively to the same items.
3. Responses of architecture students were significantly more favorable towards peers than were the responses of the art students.
4. Students aspiring to become architects showed well-defined goals for achievement; this was not the case with the artist group.
5. The data suggested that architects found more rewarding experiences in school than did artists.

COMMENTS

The results suggest that although many of the same skills may be needed in art and architecture, the personalities of the artist and architect are quite different, with respect to attitudes toward parents, peers, and school.

137.

Certainty of Vocational-Educational Plans and First Year College Achievement

Kwan, L. J. (1967)

What is the predictive relationship between definiteness of vocational-educational choice and academic achievement during the first year of college study?

POPULATION AND SAMPLE

"Subjects were drawn from the population of nearly 3,000 students who entered the University of Washington in the fall of 1966, following graduation in June, 1966, from Washington State high schools."

From this group, every 10th student was selected as part of the sample. Each was assigned to one of 36 experimental groups which had been established according to personal and biographical data.

"Random selection of 531 males and 437 female records was required before each of the 36 groups had at least 10 members."

After all groups had a minimum of 10 members, a random sample of the 10 students was chosen from each of the 36 groups, thereby obtaining a final sample of 360.

INSTRUMENTATION AND DATA

The students' personal data were obtained from their applications for admission to the college.

"Predicted grade point averages and achieved grade point averages for the fall and winter quarters for each student were made available by the University's Bureau of Testing."

Predicted grade point average (GPA) is based on a series of weighted predictors, including high school GPA and tests of verbal and quantitative achievement and aptitude.

DESIGN AND ANALYSIS

The experimental groups were: birth order (two levels), socioeconomic status (three levels), sex status (two levels), and definiteness of vocational-educational goals (DVE) (three levels).

The socioeconomic level was established and weighted according to Hollingshead's (1958) five-level system which considers father's occupation and educational level. This system was reduced to three-levels by combining Hollingshead's one and two levels into a high group and his four and five levels into a low group.

Assignment to a level of DVE was based on students' answers to three questions on the admission application. The three levels were: high (indicated a vocational choice, with or without a chosen major), moderate (no indication of vocational choice, but a chosen major or two or more academic interests quite similar to each other), and low (no vocational choice, no major, and interests, if given, were dissimilar).

Statistical tests were performed separately for males and females. In the author's review of literature, it was revealed that a differential effect of DVE on achievement for the two sexes might be anticipated.

"Chi-square analyses of frequencies were made between DVE and sex, and for each sex, between DVE and socioeconomic status, birth order, and predicted GPA. These analyses permitted a study of the relationships between DVE and these other variables."

The principle analyses were the factorial analyses of variance according to the established experimental groups. The dependent variable was the difference between the GPA over the two quarters and the predicted GPA.

RESULTS AND DISCUSSION

1. In the chi-square analyses of frequencies between DVE and sex, and for each sex, between DVE and socioeconomic status, birth order, and predicted GPA, there were no significant differences found. This indicates a lack of relationship between DVE and the independent variables.

2. "The factorial analyses of variance were also statistically non-significant for both men and women. This was true for all main effects of all the independent variables, as well as the interactions."

"The setup of this study was planned in an attempt to find out if DVE would add to the prediction of GPA; the standard predictors being high school grades, academic achievement, and aptitude test scores. Earlier studies did not use high school grades as data in analyses. It appears that what academic achievement variance has been accounted for in earlier studies, by means of DVE, can more easily be accounted for with high school grades. DVE does not appear to add anything when this is included."

COMMENTS

It may be that the end of the freshman year is too early for the effect of a definite vocational choice on college grades to be manifest. Many of the courses taken during the first year are general requirements and not related to vocational choice.

138.

The Early Identification of Managerial Talent

Miner, J. B. (1968)

Can managerial talent be identified during the period of graduate education, or does it emerge only after employment?

POPULATION AND SAMPLE

The sample was drawn from graduate students in the School of Business Administration at the University of Oregon during fall 1964, fall 1965, and spring 1966. The sample included 106 master's and doctoral students.

INSTRUMENTATION AND DATA

The instrument used was the Miner Sentence Completion Scale (MSCS). This scale is an indirect measure of managerial aspirations. It has two sections: (a) an indirect measure (item scale), which requires students to respond to situations outside of the work environment, or at least not specifically related to a managerial job; and (b) the rare score scale, which compares the student's responses with established norms to determine if a rare pattern of responses exists (occurring 5% or less in the norms). Test-retest reliability for the MSCS scales are .83 for the item score and .79 for the rare score. Validity has been established as .39.

Students were asked to indicate their career objectives.

DESIGN AND ANALYSIS

Based upon their statements of career objectives, the students were placed in one of three groups: (a) managerial intentions, (b) teaching business subjects, and (c) professionals or technical specialists. The number of students in the three groups were 41, 32, and 33, respectively. Students who did not express objectives similar to one of the three main groups were excluded from the study. Those with unclear career objectives were also excluded. It was assumed that most of the students would enter the occupation they had designated, since, presumably, that was their specific purpose for entering graduate school.

Mean scores for the three groups on the item scale, the rare score scale, and each of the subscores of the MSCS were compared.

RESULTS AND DISCUSSION

1. Students with managerial goals scored significantly (.01) higher than either of the other two groups on the item scale and rare score scale.
2. The managerial group scored significantly (.01) higher than either of the other two groups on five of the seven subscales of the MSCS—authority figures, competitive situations, masculine role, imposing wishes, and routine functions.
3. The managerial group scored significantly (.05) higher than the teaching group on the competitive games subscale.
4. The managerial group scored significantly (.05) higher than the specialists group on the standing-out-from the-group subscale of the MSCS.

COMMENTS

From the results of this study, it appears that students with managerial goals had already identified themselves, and were on their way to reaching their goals. By the time a student reaches graduate school, he probably has a pretty good feeling for what he wants to do. The design of this sudy merely confirmed their intentions.

The results of this study are based on the assumption that the MSCS scales measure managerial intentions or aptitude, or something, and not other less obvious interests, values, aptitudes, etc. Validity of only .39, even if its predictive validity (predictive of success in managerial positions) is not as high as one would desire. Less than 16% of the variance in managerial performance is being predicted by such a scale.

139.

Managerial Talent Among Undergraduate and Graduate Business Students

Miner, J. B. and Smith, N. R. (1969)

Can potential managerial candidates be selected early in their college preparation?

POPULATION AND SAMPLE

The sample consisted of two groups—124 undergraduate business students enrolled in an elementary marketing course at the University of Oregon (1967-68) and 111 graduate business students, from the same institution, tested two years earlier. (No further description of the population or sample was provided in the report of the study.)

INSTRUMENTATION AND DATA

The instrument used was the Miner Sentence Completion Scale (MSCS). This scale is an indirect measure of managerial aspirations. It has two sections—(a) an indirect measure (item scale), which requires students to respond to situations outside of the work environment, or at least not specifically related to a managerial job, and (b) the rare score scale, which compares the student's responses with established norms to determine if a rare pattern of responses exists (occurring 5% or less in the norms). Test-retest reliability for the MSCS scales are .83 for the item score and .79 for the rare score. Validity has been established as .39.

DESIGN AND ANALYSIS

Students were classified according to their expressed career objectives—managerial teaching, or business specialist.

MSCS mean scores of the various groups were compared, and the *t* test of significance was made.

RESULTS AND DISCUSSION

Graduate students with expressed managerial goals scored significantly higher (.01) on the MSCS than graduate students in other classifications.

Undergraduates with expressed managerial goals scored significantly higher (.05) than undergraduates in other classifications.

Results indicate a hierarchy of managerial motivation among students (ranging from highest to lowest): graduate students with managerial goals, undergraduates with managerial goals, and both graduate and undergraduate students in other classifications.

A normative group of on-the-job managers selected from a single large company scored between the graduate and undergraduate managerial groups.

COMMENTS

The validity is questionable until it can be demonstrated that some dependent variable (in this case, managerial success) can be predicted. It is not surprising that students who are majoring in business, with the expressed purpose of becoming managers, would then aspire to be managers on a scale like the MSCS.

The nature of the sample makes it difficult to generalize the results outside the limitations of the study.

140.

Counselor Predictive Skill and Differential Judgments of Occupational Suitability

Watley, D. J. (1967)

Do counselors who predict educational criteria at different levels of accuracy also differ consistently in their judgments of occupational suitability?

POPULATION AND SAMPLE

The sample consisted of 36 counselors who had participated in an earlier investigation designed to assess individual counselor predictive ability. The counselors were selected from the Student Counseling Bureau at the University of Minnesota, the Arts College Advisors Office at the University of Minnesota, and the Minneapolis-St. Paul suburban school districts.

INSTRUMENTATION AND DATA

The following instruments were used: the Minnesota Scholastic Aptitude Test, the Cooperative English Test, the social studies section of the Sequential Tests of Educational Progress, and other achievement information, including high school percentile rank and academic grades. Also included were the results of the Strong Vocational Interest Blank and the Minnesota Multiphasic Personality Inventory, and certain biographical information about each counselor.

DESIGN AND ANALYSIS

Counselors were ranked according to the accuracy of their predictions in the earlier study. The counselors evaluated the personal data for each of 50 randomly selected male freshmen entering the College of Arts, Science, and Literature at the University of Minnesota in the fall of 1959. The counselors were required to rate the suitability of seven occupations for each of the students, separately and collectively, using a 5-point scale. Suitability was defined as the degree to which the student or students possessed the relevant personal and educational qualifications to be successful and satisfied with the occupation.

Chi-square and simple analysis of variance were used to analyze the data.

RESULTS AND DISCUSSION

1. Marked differences were noted between counselor ratings on the students' collective suitability for the occupational possibilities.

2. Counselors who had previously predicted educational criteria at the highest level were more pessimistic about the suitability of the possible occupations for the students in general. Conversely, the low-accuracy group was more optimistic in their judgments.

3. Predictions of suitability of the seven possible occupations for each individual student involved analysis of variance. Differences among mean accuracy for each of the three counselor groups were found to be significant at the .05 level in 123 of 350 possible judgments. Again, high-accuracy counselors were more pessimistic in their predictions. A possible explanation for the pessimistic performance by the high-accuracy group was the degree of understanding separating the two groups. The high-accuracy group had a better knowledge of the mechanisms involved and the complexity of the many facets of behavior prediction.

COMMENTS

Why should knowledge of the mechanics of prediction result in low (pessimistic) predictions? While it may be difficult to make accurate predictions, it is just as easy to underestimate (be pessimistic) as it is to be optimistic.

CHARACTERISTICS

ROLE AND FUNCTION

141.

The Role of College and University Placement Director: The Annual Report as a Reflection of Role Perceptions

Segal, S. J. and Klos, D. S. (1967)

How would a placement director define his role if only his annual report were used as data? What type of criteria might be used in evaluating the report and, consequently, the role chosen by a placement director?

POPULATION AND SAMPLE

The Center for Research in Careers, Harvard University, sent letters to the 1,000 placement directors listed in the 1965-66 Directory of College Placement Offices. The letter requested copies of any completed studies pertaining to placement, occupational choice, recruiting activity, and occupational histories of former or present students. Of the 1,000 placement directors contacted, only 354 (35.4%) responded. Only 182 sent one or more documents. A total of 201 documents were received. Only 13 were studies of the type requested; 140 (70%) were annual reports.

INSTRUMENTATION AND DATA

The data were collected from the 140 annual reports submitted by the placement directors. The annual reports usually contained some, or all, of the following topics: placement starting salaries, recruiter activities, office activity, class profile, and students' reasons for job choice.

DESIGN AND ANALYSIS

It was hypothesized that a director includes in his annual report those things which he feels are important to his perceived function.

Using the data collected, criteria of evaluation for the typical or atypical role behavior were set up. "Annual reports were classified by orientation, on the basis of diversity of content, and on the presence or lack of focus on specific topics." There were nine different report orientations established. The reports were classified according to the size and type of institution submitting the report. Comparisons were made to determine if a relationship could be found between type of institution and orientation of report.

RESULTS AND DISCUSSION

1. Results showed that diverse reports were submitted by centralized placement offices at universities. The reports submitted by liberal arts colleges or colleges of liberal arts at universities were only concerned with placement (who took what job). Also, 50% of the reports submitted by teachers' colleges and

56% of the reports from engineering schools and schools of technology were placement-oriented only.

2. Between 50% to 60% of the placement directors indicated by the type of reports they signed that they considered their job to be that of a matchmaker between job and student.

3. Reports tended to show a lack of unified purpose and were frequently concerned with somewhat irrelevant topics.

4. Reports rarely mentioned trends or implications of trends in the placement function. Reports were usually concerned with the past, and seldom mentioned plans, needs, or goals.

5. "Only one of the 354 respondents mentioned research as an important function of the placement office."

6. "Only three of the 354 respondents showed concern for the counseling of students in areas of vocational relevance."

7. Only two or three respondents reported an interest or need in such things as vocational colloquia, seminars, referring students to counseling office, and coordination of placement office with other university offices, such as counseling and educational information offices.

COMMENTS

There are two main problems in this study. First, a 34% return is an insufficient sample. The original questionnaire was sent for a different purpose than that for which the information was finally used. Second, it may be erroneous to assume that what the directors included in the annual reports indicated their role perception.

STANDARDS AND PREPARATION

142.

Positive Mental Health and Facilitative Genuineness During Counseling

Foulds, M. L. (1969)

Can the ability to communicate facilitative genuineness within counseling relationships be related to or correlated with positive mental health?

POPULATION AND SAMPLE

The sample included the total population of 30 graduate students majoring in counseling and enrolled in an introductory supervised practicum at the University of Florida. The practicum was part of the counselor-education program.

INSTRUMENTATION AND DATA

The Personal Orientation Inventory (POI) was used to assess positive mental health. "Research findings indicate the POI to be a reasonably valid and reliable measure of positive mental health."

Facilitative genuineness was measured by the Facilitative Genuineness in Interpersonal Processes Scale (G). The G Scale was derived from an earlier scale that had been validated in extensive counseling research.

DESIGN AND ANALYSIS

Each student was given the POI during one of the regular class periods toward the conclusion of the practicum. He was instructed to complete the inventory and return it along with a tape recording of a counseling session conducted near the end of the practicum.

Interaction samples were selected at random. A three-minute sample was selected from each third of the interviews. These samples were spliced together in random order. Two judges rated the interaction samples. (Pearson $r=.72$ was found between ratings.)

The top eight and bottom eight students in terms of ability to offer facilitative genuineness were selected for comparison purposes.

"Group means and one-tailed tests of significance of difference between means for each of the 12 scales of the POI, and for the summed scores of the Time Competence an Inner Direction scales (all 150 items on the inventory) were then computed."

RESULTS AND DISCUSSION

1. "Seven of the 12 scales of the POI and combined Time Competence and Inner Direction scales, significantly differentiated between the two groups of subjects." Inner Direction and Capacity for Intimate Contact scales were the most powerful discriminators.

2. The high genuineness group scored significantly higher than the low group on each of the following: (a) reactivity orientation toward self, rather than others; (b) affirmation of values held by self-actualizing person; (c) ability to react without rigid adherence to principles; (d) sensitivity of responsiveness to one's own needs and feelings; (e) acceptance of self in spite of weaknesses; (f) ability to accept one's natural aggressiveness; and (g) ability to contact intimate relationships unencumbered by expectations and obligations.

3. Rating of facilitative genuineness ranged from 1.8 for the low group to 3.2 for the high group (3.0 level believed by Carlehuff and Berenson to be the minimum level of facilitative functioning).

COMMENTS

Results suggest that positive mental health is related to facilitative genuineness. The relatively small difference between the mean of the high group on genuineness and the minimal level needed to facilitate functioning suggests that the relationship found may be an underestimate of the true relationship.

The discriminating factors for possessing facilitative genuineness seem to indicate that the counselor must possess a degree of security with himself and in his position, before he can generate this genuineness.

A critical question raised by this study is: What can be done to help counselors develop the requisites and, eventually, the characteristic or talent of facilitative genuineness?

143.

Vocational Development of Student Personnel Workers

Frantz, T. T. (1969)

What factors are involved in the vocational development of student personnel workers?

POPULATION AND SAMPLE

Ten institutions were selected as being representative of the different types of institutions of higher learning: a large eastern university; two large midwestern state universities; two eastern state colleges; a small, urban, private liberal arts university in the East; a church-related, midwestern liberal arts college; a small, private, non-sectarian, midwestern liberal arts college; a large, urban, midwestern Catholic university; and an eastern community college. (The names of the institutions were not specified in the report of the study.)

Questionnaires were sent to 165 student personnel workers (SPWs) at the 10 institutions. A total of 131 completed questionnaires was returned. The respondents included 84 male and 47 female SPWs. About 37% of the student personnel workers held positions at either the dean or director level. Approximately 95% had some graduate work, 64% held a master's degree, and 8% had a doctorate.

INSTRUMENTATION AND DATA

A specially constructed information sheet requested such information as: present position, sex, marital status, age, age upon entering the field, graduate and undergraduate major, degree(s) held, reasons for entering student personnel (SP), and persons influencing decision to enter the SP field.

Holland's classification system of occupational environments was used to classify each respondent's major field of study.

DESIGN AND ANALYSIS

Reasons for entering the field were determined by an open-ended essay question. The answers were used to classify the respondents into one of seven categories: (a) favorable undergraduate SP experiences, (b) fortuitous circumstances (just happened into it), (c) enjoyed campus life, (d) rational choice, (e) improvement of campus life, (f) identification with someone already in SP, and (g) altruistic needs.

Respondents were also classified on the basis of undergraduate and graduate majors and their appropriate classification of occupations according to Holland's system.

Results were tabulated and reported as totals and percents.

Respondents were also asked if anyone had influenced their decision to enter SP and, if so, who?

RESULTS AND DISCUSSION

1. Totals and percents of respondents in each of Holland's categories were: 54 social (41.2%), 30 enterprising (22.9%), 29 artistic (22.1%), 14 intellectual (10.7%), 4 conventional (3.1%), and no realistic. Approximately 83% of the respondents with graduate degrees majored in a social-type field.
2. Totals and percents of respondents according to reasons for entering SP were: favorable experience, 19 (14.6%); fortuitous, 49 (37.4%); enjoy campus, 30 (23.1%); rational choice, 7 (5.4%); improve student life, 3 (2.3%); identification, 8 (6.2%); and altruistic needs, 14 (10.7%).
3. Sixty-five percent of the respondents stated that one or more persons had influenced their decision to enter SP. The most common influence was a dean of students (31%), followed by a friend in the field (11.5%).
4. Other data revealed such biographical information as: 71% of the men were, or had been, married, compared to 26% for women; 37% of the sample held positions of dean or director; median age of the sample was 31 years; median age upon entering the field was 25 years; and median length of time in the field was four years.

Based on the results of this study, five hypotheses were suggested:

Hypothesis 1—Women in SP choose career over marriage at an unusual rate, when compared with women in general.

Hypothesis 2—SPWs manifest considerable vocational indecision and lack of occupational direction.

Hypothesis 3—People enter SP under normative social pressure and through identification with someone in SP.

Hypothesis 4—SPWs are primarily social and secondarily enterprising people.

Hypothesis 5—The pattern of reasons for entering the field given by any of the SPW subgroups was similar to the pattern of the whole group.

COMMENTS

The study supposedly represented all types of institutions of higher learning, yet no western institution was included.

Were there only 165 SPWs at the 10 institutions studied? The high percentage of deans and directors included in the study leaves doubt that the sample was representative of the proportion of administrators to non-administrators.

The hypotheses, as stated, are inadequate, and some are even incorrect. Hypothesis 1 compares SP women with women in general, as opposed to other career women, when speaking of rate of marriage. Hypothesis 2 suggests vocational indecision and lack of occupational direction for SPWs, based on the time that most of them entered the field. Possibly, these people did not attend a university which offered a major in SP, or they may not have been aware of it. Other results indicate that their occupational preferences (Holland) were consistent with their choices.

144.

Personality Characteristics of Counseling Students at Various Levels of Training

Mordock, J. B., Jr. and Patterson, C. H. (1965)

At various levels of training, are there any differences in the personality characteristics of students who counsel?

POPULATION AND SAMPLE

The sample included all students enrolled in one, and only one, of four graduate counseling courses at the University of Illinois during the summer of 1961. The four courses were hierarchically arranged: Principles of Guidance (level 1), Basic Principles of Counseling (level 2), Principles and Techniques of Group Counseling (level 3), and Supervised Practice in

Counseling (level 4). Anyone enrolled in more than one of the four courses was excluded from the study. The number of students in each level were 25, 28, 19, and 14, respectively.

INSTRUMENTATION AND DATA

Four instruments were used: (a) six selected scales (sociability, social presence, self-acceptance, tolerance, intellectual efficiency, flexibility) of the California Psychological Inventory (CPI); (b) Osgood's semantic differential (SD) technique measured four concepts: client-centered method, myself as a counselor, my actual self, and my ideal self (only the first two concepts were used in this study); (c) Rokeach's Opinionation Scale (American Version Form C); and (d) Dogmatism Scale (Form D).

All instruments were administered during the first and last weeks of the eight-week summer session. The first administration was the pretest and the second was the posttest. (No reliability and validity coefficients for the instruments were included in the report of the study.)

Scoring of the Osgood technique was done on the Osgood evaluative factor, represented by the optimistic-pessimistic scales.

DESIGN AND ANALYSIS

There were five hypotheses studied in this experiment:

Hypothesis 1—The scores on the CPI scales will increase from level 1 through level 4.

Hypothesis 2—The scores on the posttest of the CPI will show an improvement over scores on its pretest.

Hypothesis 3—There will be little difference among students in the first three levels of classes, but students in level 4 will be less opinionated and less dogmatic, especially on the posttest.

Hypothesis 4—The SD scores on the evaluative factor for the concepts "client-centered method" and "myself as a counselor" will increase with level of training.

Hypothesis 5—Students high in dogmatism will evaluate the concept "client-centered method" lower than those low in dogmatism. (For this analysis, data from all students were treated together. The highest 25% on the dogmatism scale were compared to the lowest 25%.)

The one-tailed *t* test of significance of differences among groups was used. The formula for matched groups was used in comparing scores from the pretest and posttest.

RESULTS AND DISCUSSION

Hypothesis 1—There was a general increase from class level to level for the mean values on each of the six scales of the CPI, although most of these increases were not large enough to result in significant differences between groups.

Hypothesis 2—A comparison of the pretest and posttest mean scores on the CPI revealed no significant differences. This hypothesis was rejected.

Hypothesis 3—Level 4 was significantly below (.05) levels 1 and 2 on the dogmatism scale. Level 4 was significantly lower (.01) on the Opinionation Scale than the other three groups. Hypothesis 3 was, therefore, accepted.

Hypothesis 4—(a) No significant differences were found between the pretest means of the various class levels on the SD evaluative factor for the two concepts "client-centered method" and "myself as a counselor." The posttest means for level 4 for both concepts were significantly higher than the pretest means for that level. (The level of significance was not stated in the report of the study). Hypothesis 4 was only partially accepted.

Hypothesis 5—The top 25% and bottom 25% of the students, in terms of dogmatism, showed significant difference in their pretest scores on the SD evaluation for the concept "client-centered method" thus supporting the hypothesis that less dogmatic students see more value in the client-centered method than do students who are more dogmatic.

Although the groups are small and the progression, in terms of education, does not cover a wide range of discrete levels, the results of the study tended to accept the hypotheses as stated.

The better trained students may give more adjusted responses to the CPI and other such instruments.

COMMENTS

No evidence was given that the students in the study had taken the four courses in the desired order. Thus, students in class levels 2, 3, or 4 had not necessarily taken the lower level course(s).

The small sample size may have resulted in type 1 errors. The data are open to at least two interpretations: (a) counselor training changes students so that they are less dogmatic and better adjusted, or (b) less dogmatic, better adjusted students are more likely to continue counselor training. These data do not allow a clear-cut choice of one of these alternatives (or any other possible alternative).

EVALUATION

145.

Evaluation of a Criterion: Realism of Vocational Choice

Hewer, V. H. (1966)

What is the evaluation of realism or appropriateness of vocational choice as a criterion for vocational counseling?

POPULATION AND SAMPLE

The population consisted of 93 students (78 men and 15 women) who were enrolled for one quarter in the course "Choosing Your Vocation" during the spring and fall quarters of 1955 and the winter quarter of 1956, at the University of Minnesota. After the first class meeting of each of the three terms, 16 students were randomly sampled from the total group for that term (total of 48 randomly selected students).

INSTRUMENTATION AND DATA

The instruments included: Strong Vocational Interest Blank (SVIB), Minnesota Multiphasic Personality Inventory (MMPI), Ohio State Psychological

Examination (OSPE), American Council on Education Psychological Examination—1952 College Edition (ACE "52"), Cooperative English, a personal history form and short questionnaire stating vocational choice at the time of the first class period, Minneapolis Veterans Administration Hospital rating form, and Dictionary of Occupational Titles (DOT).

DESIGN AND ANALYSIS

Realism of vocational choice for each student was determined by a panel of four experienced counselors.

The 48 randomly sampled students were given a group counseling treatment, and the remainder of the class was given individual counseling.

In the spring of 1963, a follow-up questionnaire was sent to all students in the study (86% returned the questionnaire). The form requested such information as: present job title, description of duties, employer, satisfaction with employment, and satisfaction with vocational guidance. Ratings, obtained by the Minneapolis V.A. Hospital form, were used to determine the degree of similarity between vocational choice following counseling and current employment.

The occupations listed by the students were classified by type and level. The type of occupation was coded using the DOT. Level was determined by the amount of education and responsibility required by the job. Values from 1 to 5 were assigned to represent the degree of similarity between vocational choice and current occupation. The lowest score reflected the greatest similarity. Results were reported as totals and percentages.

RESULTS AND DISCUSSION

1. The total number and percent of students in each score group were: no change, 27 or 33.75%; change, but same level and type, 24 or 30%; change in type, not level, 18 or 22.5%; change in level, not type, 1 or 1.25%; and change in both, 9 or 11.25%.
2. Sixty percent of the students were satisfied with vocational counseling as they received it.
3. The chi-square test showed no significant relationship between judges' rating of realism of vocational choice and realism as determined by similarity of vocational choice and current employment.

"Realism of vocational choice is a meaningful goal for vocational counseling and a suitable criterion for judging its effectiveness. Judgment by experts, however, did not prove to be a good substitute for follow-up of clients in the evaluation of realism of vocational choice."

COMMENTS

Using students in a class on choosing your vocation biases the sample; i.e., by including a disproportionate number of students seeking guidance in choosing a vocation. One wonders how students can be taught to be realistic in vocational choices by experts who themselves cannot judge the realism of students' vocational choices. Perhaps the inability of judges to rate realism of vocational choice explains why so many students did not change from their original vocational choice made before counseling (64% of the students did not change level or type of vocational choice). In light of the apparent need for help the students' sought in choosing a vocation, this finding particularly casts doubt on the adequacy or purpose of the counseling sessions.

146.

Criteria in the Evaluation of Educational and Vocational Counseling in College

Hill, A. H. and Grieneeks, L. (1966)

Can grade point average be used as a criterion for evaluation of educational and vocational counseling in college?

POPULATION AND SAMPLE

The sample consisted of 479 freshmen entering the University of Texas in the fall of 1961. They all eventually worked with the testing and counseling center. The remaining 2,100 freshmen were used as a comparison group for part of the study.

INSTRUMENTATION AND DATA

The instrumentation included the Texas Admission Test, the Differential Aptitude Tests (DAT), and the grade point average (GPA).

DESIGN AND ANALYSIS

This study involved a series of increasingly sophisticated comparisons between counseled (experimental group) and non-counseled (control group) students. Statistics used to analyze the data included significant differences of the means and multiple linear regression analysis.

RESULTS AND DISCUSSION

1. When counseled, students were compared to all non-counseled students; the experimental group was significantly higher in terms of test scores and first-semester GPA than the control group. The two groups were then equated for ability on the basis of test scores by using multiple linear regression analysis which completely accounted for the differences in GPA.
2. When graduation by June 1965 was used as the criterion for comparison between matched groups, no significant differences were found.

COMMENTS

Controls were used in an attempt to minimize contaminating variables. However, there may have been differences between the groups which were not picked up by the satistical procedures used.

The author suggests that GPA may be too insensitive to detect possible subtle effects of counseling.

The critical assumption in this study implies that the differences between the counseled and non-counseled groups could be ascribed to counseling. If the counseled students self-selected into that group, rather than being randomly assigned to the counseled group, then the two groups differ. The question then becomes one of determining how else they differ. When it was found that they differed with respect to GPA or another index, the only deduction which could result would be that people selecting counseling also differ from people not selecting counseling, with respect to these other indices. Thus, the question about differences cannot be answered by this study. (If the students were randomly assigned to counseling, then this question could be answered.)

147.

What They Really Think

Palmer, R. M. (1964)

What do college graduates think of their alma mater's placement office and the services it offered them?

POPULATION AND SAMPLE

The sample included approximately 400 men and women graduates from 23 colleges and universities in New York and New England, between the years 1957 and 1963. Technical and liberal arts graduates were equally represented.

INSTRUMENTATION AND DATA

The interview method was utilized to capitalize on spontaneous reactions rather than tempered second thoughts which often result from written answers. Some of the questions asked were: "Who was the placement director at your school? What is the main function of the placement office? How often did you use the placement office while at college? Did you get your position your senior year through the placement office, either directly or indirectly?"

DESIGN AND ANALYSIS

The responses were grouped for each question, then tabulated. Results were reported in terms of percentages of students holding similar opinions.

RESULTS AND DISCUSSION

1. Sixty-seven percent saw the function of the placement officer as a matchmaker between student and job.
2. Fifty percent of the students never used the placement officer (a positive correlation was found between grade point average and number of times the student used the placement office).
3. When first asked how much help they received from the placement office in gaining a position, about 55% of the women and 25% of the men said they had received help. After further consideration, about one-quarter of the men changed their minds and decided they had received help from the placement office, thus, making a total of 50% of the men who said they had received help.
4. Most students felt the status of the placement office was good as far as they were concerned, but they did not think other people (students and faculty) felt that way.
5. The large majority (225 of 301) felt that company representatives had not been truthful during the placement interview. Of those joining a company, 191 of 259 felt that the recruiter had been accurate in his description of the situation.

The author does not consider this to be a scientific survey, but rather a sampling of opinions.

COMMENTS

The findings of this investigation open some possible areas for future research concerning the improvement of the placement office and its functions. For example, the people with the lower grade point averages who probably needed more assistance in finding a job were the ones who were not using the placement office. What changes can be made that will make the placement office of more service to the lower achieving student?

148.

Student Credentials: What Elements Are Really Essential?

Paquette, J. W. (1966)

How essential to the placement process are the various parts of student credentials?

POPULATION AND SAMPLE

A questionnaire was sent to 263 college members and 645 employer members of the Midwest College Placement Association (MCPA). An effort was made to send only one questionnaire to a company or placement office, even though more than one member may have been located there. A questionnaire was sent to each placement office in the case of decentralized organizations. College members returned 176 questionnaires (66.9%), and employers returned 455 (70.5%). Due to the length of the questionnaire (4 or 5 pages), 70% was considered a high rate of return.

INSTRUMENTATION AND DATA

Two forms of the questionnaire were used: one form for college members and the other for employer members. Both forms questioned which parts of the students' credentials were important and should be used in the placement process.

DESIGN AND ANALYSIS

Responses were summed and reported as percentages. The items included in the credentials were arranged in rank order according to the number of respondents who felt each item was important.

RESULTS AND DISCUSSION

1. Results showed considerable agreement between employers and colleges concerning the three most important items in the credentials. The employers ranked personal data most important (75.8%), followed by educational history (69.8%), and work experience (69.6%). The colleges ranked personal data highest (88%), then work experience (81.2%), and educational history (80.6%).
2. Employers listed grades in fourth place (65.2%), while colleges ranked grades ninth (18.1%). Fourth place for colleges was faculty references (65.9%).
3. The rating of credentials revealed considerable disagreement between employers and colleges. Only 8.6% of the employers felt that credentials were essential, while 43.8% of the colleges felt they were. About 40% of the employers felt credentials were very important, and 45.5% said they had some value. Of the colleges, 25.6% felt credentials were very important, and 14.2% said they had some value. Only 6% of the employers felt credentials had little or no value, and 16% of the colleges agreed.

COMMENTS

Numerous specific results were reported, but those listed above seemed to tell the story. The wide disparity between colleges and employers of the perceived value of credentials is interesting. What do employers substitute for credentials? If the answer is interviews, then the importance of research pertaining to interviews is enhanced.

The Employer

CAREER CHOICE, PLANNING DEVELOPMENT

EFFECTS OF PROGRAMS

149.

The Management Progress Study at A.T. & T.

Campbell, R. J. (1968)

What changes take place in management trainees at American Telephone and Telegraph Company over a period of years, and what environments and experiences provided by the company are related to these changes?

POPULATION AND SAMPLE

The sample included 422 management trainees from six Bell System companies. About two-thirds of the trainees were recruited after graduation from college. The remaining one-third were management trainees who had worked their way up through the ranks and were promoted into management. Some of these trainees had completed college in the evenings.

INSTRUMENTATION AND DATA

During his first year, each management trainee had attended an assessment center where he was given pencil-and-paper tests which included personality, aptitude, and knowledge of current events inventories. Biographical information and staff evaluations based on 25 variables were collected through the assessment program. Beginning in the second year of the program, each trainee was interviewed by a psychologist who explored such areas as: job responsibilities, reaction toward boss and his job, evaluation of performance, trainee's aspirations, training, and outside activities. These interviews were conducted annually through the seventh year. In the eighth year, the trainees were reassessed using procedures similar to the original assessment. In addition, their performance appraisal, salary, and potential ratings were obtained.

During the sixth year, each trainee's supervisor was interviewed. The interview was postponed until that time to avoid calling the supervisor's undue attention to the trainee. (No explanation was given in the report of the study as to what information was gained from the supervisor interview.)

DESIGN AND ANALYSIS

The purpose of this study was to examine each assessment technique used and to evaluate its contribution to the over-all rating of the potential for each trainee and the relationship between assessment judgments and progress criteria using a longitudinal study design. (No further description of the design and procedures of analysis was included in the report of the study.)

RESULTS AND DISCUSSION

1. Interview results showed that several college recruits were dissatisfied with the program which rotated them through many departments, allowing only a short time in each. Their objections explained that they did not have a chance to perform a useful function and that the company could not learn much about them.
2. The point in progress that differentiated between the college and non-college trainees was promotion to third or district-level management. About 50% of the college graduates were judged as having potential for third-level management, compared to only about 33% of the non-college group. About one-half of those college graduates judged as having third-level potential had attained that level within seven years, compared to about one-third of the non-college group.
3. All reassessments were not complete and only tentative findings can be reported based on 44 cases (all from the same company). These tentative results include that Edwards Personality Preference scores showed the trainees increased in need achievement and need autonomy over the eight-year period, while their need exhibition and need deference decreased.

The Guilford-Martin GAMIN scales revealed that the trainees who were judged as low success individuals in terms of management promotions became less self-confident with time. The moderate success individuals increased in need endurance on the Edwards Personality Preference.

Need achievement, measured by the Thematic Apperception Test, was also related to the amount of challenge presented to each trainee in the work he was assigned.

COMMENTS

Explanation of procedures was sketchy and made it difficult at times to determine exactly what was done. The results of this study do tend to support the usefulness of continual evaluation to improve a program. The changes noted on the smaller sample, while of a tentative nature, are nevertheless interesting because they suggest that job experiences do interact with personality characteristics. Personality characteristics appear to change in order to be consistent with job experiences.

150.

The College Graduate Trainee: Behavioral Science Perspectives on Management's Prime Personnel Problem

Patten, T. H. (1969)

How do some college graduate trainees regard career plans and decisions, education, and initial industrial employment?

POPULATION AND SAMPLE

Ninety trainees from a very large, multi-product industrial firm participated in the study. All 90 held bachelor's degrees; 23 also held master's degrees. An additional 20 were working in evening programs toward master's degrees. Fifty-seven were married, 33 were single. (The report of the study did not provide the identity of the firm or the year of the study.)

INSTRUMENTATION AND DATA

No pencil and paper instruments were used. "A semi-structured, focused group interview format was used to elicit information. The general pattern of interview questions was planned in advance. . ."

DESIGN AND ANALYSIS

The trainees were interviewed in six different groups. They were assigned to groups by work experience or length of service in the firm; i.e., sales, marketing, production, one year of service, etc.

Each group was interviewed for approximately eight hours, off the company premises. The interviewers were company personnel (practicing managers) and social scientists.

The information obtained from the interviews was subjectively summarized. No statistical treatments were performed.

RESULTS AND DISCUSSION

1. While at the sophomore level of college, trainees typically had not made basic career decisions.
2. Trainees are ambitious for success, but do not have definite career plans.
3. Most trainees felt no loyalty to the employing organization.
4. Seeking employment is a process involving the assessment of opportunities, based on incomplete information and chance.
5. Geographical relocation is regarded as a significant problem.
6. Orientation to industrial work is not adequate.
7. Initial and subsequent work assignments are perceived as unchallenging.
8. Academic education is regarded as only generally useful to trainees in conducting their assignments.

COMMENTS

Inferences are limited, since the study was confined to trainees from one firm.

A strong reliance was placed on subjective interpretation. It is probable that more objective methods could have been developed, using information from the interviews.

Since a group-interview technique was employed, the possibility exists that the more active or aggressive personalities could have dominated the discussion and significantly influenced the comments of the rest of the group.

CHARACTERISTICS

RECRUITMENT PROGRAM

151.

Why Not Boeing?

Boeing Company, College Recruiting Steering Committee (1967)

Why did some 1967 college graduates reject offers of employment with the Boeing Company?

POPULATION AND SAMPLE

Questionnaires were sent to 2,880 college graduates who had rejected a position with Boeing in the spring of 1967. There were 121 questionnaires returned by the U. S. Post Office Department as being undeliverable. Of the 2,759 remaining questionnaires, only 1,379 (50%) were returned. An additional 79 questionnaires were excluded for various other reasons. The final number of usable questionnaires was 1,300. The authors of the report considered the 50% return to be an unusually high rate, denoting continued interest in employment at Boeing on the part of the respondents.

INSTRUMENTATION AND DATA

The questionnaire used in the study was designed for easy completion and provided an opportunity to support answers with short statements. The respondents were asked to review a list of factors which possibly contributed to their decision not to accept a position with Boeing. They were then asked to rate each factor according to how much it contributed to their decision.

The respondents were asked to comment on two or three of the major reasons for not accepting a position at Boeing. The questionnaire also collected information about the positions finally accepted by the respondents and their major reasons for acceptance.

DESIGN AND ANALYSIS

The responses were grouped and comparisons made between reasons for rejecting Boeing and reasons for accepting other positions. The data were converted to percentages for the comparisons. Statistical tests of significance were applied to the differences between the means of the various subgroups created by the responses.

RESULTS AND DISCUSSION

1. Three factors—lack of plant visits, salary offered, and job offered versus specific interests—appeared to be the most important influencing factors for rejection of positions with Boeing. Between 30% and 38% of the respondents listed these factors as being major influences; about 15% listed each factor as the most important single influence.

2. Comparisons between salary offers accepted and those offered by Boeing showed that about 51% accepted higher salaries, 20% reported similar salaries, 20% accepted lower salaries, and 9% did not respond.

3. About three-fourths (73%) visited the plant before accepting employment, 19% indicated no such visit, and 8% did not respond.

4. Types of organizations joined were: aerospace 29%, manufacturing 35%, civilian employed by the government 7%, military 2%, other employment (self-employment, consulting, teaching, etc.) 16%, and graduate study 11%.

5. When analyzed by college degree, reasons for rejecting Boeing indicated that M.B.A.s were primarily concerned about salary, advancement, and jobs matching their qualifications.

6. Location appeared to be a major consideration for married respondents, while time-to-make-offer was important to single respondents.

COMMENTS

A 50% return on questionnaires is not generally considered to be an unusually high percent and may tend to bias the sample. Perhaps only those who wanted to keep the door open at Boeing felt an inclination to respond. Of course, these people might also censor their responses to some degree.

152.

The College Graduate: His Early Employment and Job Satisfaction

College Placement Council, Inc., Research Information Center (1969)

Has business been getting its fair share of the college graduates?

POPULATION AND SAMPLE

Two samples were included in this study. Sample #1 consisted of 33,073 graduates selected from the National Opinion Research Center (NORC) sample of 56,664 college graduates from the class of 1961. This included 19,693 males and 13,380 females. The sample was also subdivided on the basis of those graduates who accepted employment during 1961 and remained employed (not necessarily with the same company) for a three-year period. A total of 9,462 males and 5,590 females (approximately 50%) met this criterion.

Sample #2 included 10,048 (5,559 males and 4,489 females) high school seniors drawn from a larger sample of 440,000 students from some 1,300 high schools. The 10,048 students in this study went to college in 1960 and graduated four years later. They also responded to a questionnaire mailed to them in 1965. The main sample of 440,000 high school students was the sample being used in Project Talent, a 20-year longitudinal study of high school students conducted by the American Institutes for Research (AIR).

The rationale for using these two samples was that they provided an opportunity to look at employer distribution for two years, and they provided the basic data which made it possible to compare the two samples. Differences in samples somewhat limited their use.

INSTRUMENTATION AND DATA

Academic Performance Index (API) was used as a criterion of brightness. (The procedures used in gaining this information were not explained in the report of the study.) Two measures of employer were used: actual employer and expected employer determined at graduation.

DESIGN AND ANALYSIS

Employing organizations were divided into five main categories: private business and industry, government, schools, colleges and research, and others (including hospitals, welfare organizations, churches).

For the graduates from the NORC sample, employment distributions were included for actual employers during the years 1962, 1963, and 1964. The 1965 employment distribution for the AIR sample was included. The employment paths of any individual from the NORC sample cannot be followed from year to year. The paths of groups of individuals can be followed; "for example, 71% of the males of the class of 1961 who expected to work for a large firm actually did so in 1962."

The results were reported in terms of percentages of graduates employed in the various categories.

RESULTS AND DISCUSSION

1. The results showed that the percentage of male graduates employed in business and industry declined over the four-year period from 1962 to 1965 inclusive. The percentages per year were: 53.3%, 52.1%, 54.2%, and 43.7% for 1962, 1963, 1964, and 1965, respectively. (Note that the 1965 percentage represents a different sample.)

2. There was an upward trend over the four-year period in the percentage of male graduates employed in the colleges and research category. The respective yearly percentages were 3.8%, 4.0%, 5.2%, and 10.2%.

3. There was a slight decline in the percentages of male graduates employed in schools below the college level—22.0%, 20.4%, 19.9%, and 17.4%.

4. The percentages of male graduates employed in government and military services fluctuated over the four-year period—14.2%, 20.5%, 14.1%, and 25.1%. The high percentage of the 1965 AIR sample in the military and government category may, in part, be accounted for by the fact that this sample included students who went directly from high school into college, waiting to fulfill their military obligation until after graduationg from college.

5. The results of the 1962, 1963, 1964, and 1965 employer distributions showed that roughly 50% of

the male graduates in both samples were connected with business as a career. The results also showed that, on the average over the four years, only 14% of the female graduates were involved with business.

6. The trends for employment of females during the four years closely followed the employment trends of males in terms of ups and downs in each category, but not in percentages. The largest actual employer category for female graduates was schools below the college level (60%). The percentage in the school category revealed a very slight decline until 1965 when it showed a 4.7% increase. The percentages across the four years were 60.6%, 60,0%, 59.2%, and 63.9%.

7. The percentages of high and medium API male graduates (NORC sample only) were compared with the percentages of low API male graduates expecting employment in each category. The percentages of high/medium API graduates in each group were: business (58.2%), college/research (18%), schools (10.6%), government and military (7.9%), and other (5.2%). The percentages of low API male graduates in each category were: business (57.3%), college/research (6.8%), schools (17.5%), government and military (11.8%), and other (6.5%).

The main differences were found in the categories of schools and college/research. Schools had more low APIs, while college/research had more high/medium APIs. (No tests of significance were applied.) Similar results in terms of trends, but not percentages, were found for females expecting employment in each category.

8. Comparisons between the percentages of high/medium and low APIs for initial employers in 1962 and actual employers in 1964 revealed only minor differences in all but the schools and college/research categories. In schools, higher percentages than anticipated were found from both groups of API males (10.6% high/medium and 17.5% low expecting employment compared to 19.2% and 23.8% initial, and 17.3% and 21.8% actual). The opposite was true for college/research.

Similar trends were found for females.

9. The results show that business is getting its fair share of the college graduates, both bright and otherwise.

COMMENTS

The results are not as clear as hoped, especially with respect to interpreting trends because the AIR sample did not appear to be from the same population as the NORC sample. Several of the results were based upon differences between the samples; for example, refer to results 1, 2, 3, and 6.

153.

The Man That Got Away—Again

Gelardi, R. C. (1964)

Why do job applicants lose interest in a potential employer?

POPULATION AND SAMPLE

Questionnaires were mailed to 1,500 people who at one time had applied for a position with the Internal Revenue Service (IRS), but later lost interest. There was a 60% return on the questionnaires (N=900).

(The report of the study did not indicate if the 1,500 represented the entire population of applicants who had lost interest in employment with the IRS; also, it did not establish a time period for applicants.)

INSTRUMENTATION AND DATA

A questionnaire required respondents to give their reasons for losing interest in IRS as a prospective employer. Some of the questions were open ended, allowing for more explanation from the respondents.

DESIGN AND ANALYSIS

The major reasons for loss of interest in employment with IRS were reported in terms of the percent of respondents who listed each item. No statistical treatment of the data beyond the computation of the percentages was involved in the study.

RESULTS AND DISCUSSION

1. The percent of respondents who checked each of the five following items were: salary too low, 46%, too much time elapsed before job offer was made 35%, job location unsatisfactory 20%, moving expenses not provided 9%, and delay in answering initial correspondence 9%.

2. Over 550 respondents (60%) indicated that they were still interested in IRS employment.

3. Some of the items checked by the respondents represented conditions which were a product of the nature of IRS. In other words, the delays in job offers were a result of red tape.

4. No extenuating circumstances can account for the time elapsed in answering the initial correspondence. This represents a real threat to the effectiveness of the IRS recruiting program.

COMMENTS

A description of the sample did not distinguish between those who were purposely discouraged and those who were inadvertently discouraged from further pursuit of employment with IRS.

As the results indicated, many of the respondents never did lose interest, but other offers came earlier. This suggests that expediency may be a major factor in the improvement of recruitment programs.

154.

Recruiting Women Agents

Life Insurance Agency Management Association (1964)

What are the recruiting practices, trends, and needs of life insurance companies regarding female agents?

POPULATION AND SAMPLE

The sample included 258 of the Life Insurance Agency Management Association's (LIAMA) 358 member companies located in Canada and the United States. The 258 responded to a short questionnaire mailed to them in 1964 by the Research Selection Committee and the Research Advisory Committee of LIAMA.

INSTRUMENTATION AND DATA

A questionnaire was mailed to each member company. The purpose was to investigate the recruiting practices of the various companies regarding female agents.

DESIGN AND ANALYSIS

The responses were tabulated and reported as percentages of the responding companies replying in a given way.

RESULTS AND DISCUSSION

1. A total of 130 companies reported hiring one or more females during 1963. Forty-two percent expressed intentions to recruit more women in the future. Thirty-one percent of the companies which had not hired women in 1963 expressed intentions of recruiting women in the future. Only 22% which had recruited women in 1963 reported an influence from the home office in that direction.
2. A total of 532 different agencies, representing 117 different companies, contracted 911 female recruits.
3. Fifty-one percent of the female recruits were hired on a part-time basis or were issued broker's contracts, 32% were hired on a full-time financed basis, and 17% were hired as full-time agents with no financing.
4. Approximately one-third of the companies reported that women were generally financed at a lower rate than men.

COMMENTS

The results of this study may be useful when counseling women students with regard to careers in the life insurance industry. In addition, the results should provide the industry with some definite guidelines for the recruitment and employment of female agents.

155.

College Recruiting Practices

Life Insurance Agency Management Association (1965)

What are the various types of recruitment practices being used by major insurance companies?

POPULATION AND SAMPLE

The sample included 237 life insurance companies which were members of the Life Insurance Agency Management Association (LIAMA). The sample represented 70% of the companies which had received a questionnaire. They were polled to determine what type of home-office-sponsored college recruiting program each was conducting. Only 24 (10%) reported any type of current college recruiting program. All but four of these 24 were large companies with at least $150 million of in-force insurance. An additional 34 companies (14%) reported intentions to begin college recruiting programs. The 179 remaining companies had no programs in operation or under consideration. It was assumed that the companies which did not respond (30%) also had no such programs. Some branch offices may have conducted such programs, but only those programs sanctioned by the home office were of interest in this study. The results of the study were based on the data from the 58 companies which were conducting or planning organized college recruitment.

INSTRUMENTATION AND DATA

A questionnaire was designed and distributed by the LIAMA Relations with Universities Committee. The questionnaire sought to determine what types of recruiting programs were being conducted on college campuses.

The life insurance industry's Joint Committee on Careers for College Graduates sponsored a series of conferences between 1957 and 1963. At these conferences, college placement personnel were asked to evaluate the techniques used by life insurance recruiters. A summary list of suggestions and problems was taken from the proceedings of these conferences and used in this study.

DESIGN AND ANALYSIS

The reported recruitment programs were examined and categorized according to common characteristics. The results were reported in terms of the categories used, a description of the program, and the number of companies using each program. The reported programs were compared to the list of suggestions and complaints of college placement personnel.

RESULTS AND DISCUSSION

1. Three basic categories of college programs were described by the responding companies: undergraduate programs (18 companies), career agent programs (17 companies), and management trainees (9 companies). Some of the 24 companies conducted programs described in more than one category.
2. The categories included three basic programs. Undergraduate programs—This plan employs college students as part-time salesmen, hoping that the student salesmen will continue as career salesmen after graduation. The methods of compensation include: commission (12 companies), annual commissions (4 companies), drawing account (1 company), and $150 per month salary (1 company).

Career agent—Of the 17 companies using this type of plan, 14 treated new college graduates the same as any other new agent, in terms of selection standards, training, and financial arrangements. The other three companies had special training programs for college graduates which deferred field activity for a period ranging from one to nine months. During the period of deferment, the college graduate spent part of his time in the home office.

Management trainees—All but one of these companies started the college-recruited person in non-sales activity. In all cases, the trainee was considered a home office employee and was under this direction, regardless of his specific assignment.

3. Of the 34 projected programs, 19 companies were planning a program to recruit full-time agents, 12 companies were anticipating management trainee programs, and 11 were considering undergraduate-type programs.
4. Recruiting practices suggested by college placement personnel included: recruit through the home office, using a professional recruiter; provide recruiting literature; concentrate recruiting activity at the

placement office; do not use the recruiting program as a means to sell insurance; and become familiar with, and show an interest in, the position of the placement officer.

5. It was not always possible to match recruiting procedures of companies with suggestions from placement officers. It was found that most of the companies reporting a program did work through the home office and did provide recruiting literature.

COMMENTS

The descriptions of the programs were too vague to draw any real conclusions. The suggestions offered by placement personnel do provide some guidelines for companies interested in developing a recruiting program.

156.

Organizational Views on Recruitment, Employment, and Education of Engineers in Industry and Government

Perrucci, R., LeBold, W. K., and Howland, W. E. (1966)

What are the views of engineering and personnel management concerning the recruitment, employment, and education of engineers?

POPULATION AND SAMPLE

The report of this study was based upon responses from 128 management representatives and 133 personnel representatives from 150 industrial and governmental organizations. All the organizations were included in the American Society for Engineering Education (ASEE) Goals of Engineering Education Survey of Engineers in Industry and Government. Also included in this study were the responses from 110 (69%) of the 160 industrial members of ASEE.

INSTRUMENTATION AND DATA

A questionnaire was sent to the 150 organizations included in the ASEE survey, and 160 industrial members of ASEE. The questionnaire was designed to investigate four main areas: (1) present and future needs for engineering, scientific, and technical personnel, (2) recruitment practices of organizations, (3) policies for professional development of engineers, and (4) educational needs of engineers.

DESIGN AND ANALYSIS

Responses were tabulated and the results were presented as totals, percentages, and trends.

RESULTS AND DISCUSSION

1. "In over 80% of the organizations, engineers are found to comprise one-half or more of the total work force of engineers and technicians."

2. "In one-half of the organizations, 24%, or less, of the engineers are employed in research and development functions. Similarly, half of the organizations employ less than 59% of their engineers in research, design, and development, and half employ more than 59% in such functions."

3. Only about one-half of the managers felt the numbers of engineers at all levels of education were adequate.

4. The greatest needs were projected for engineers with B.S. and M.S. degrees, and for technicians. Needs were also projected in the areas of scientists, mathematicians, and Ph.D. engineers, but not as strongly.

5. About 60% of the organizations do most of their recruiting at 10 or more schools; 25%, at 60 or more schools.

6. Approximately 50% of the companies recruit on a regional basis; 25%, national; 20%, local.

7. Less than 50% of the companies recruit engineers for specific positions; about 25% recruit for training programs; and about 33% recruit for both purposes.

8. The criteria used in hiring engineers showed that most importance was placed on the applicant's personality, followed closely by his grades, then work experience, and professor's recommendations. Of least importance was psychological test results.

9. A consensus of opinion appeared regarding the appraisal of the educational areas of the recent engineering graduates. They were thought to be stronger in mathematics, physical sciences, programming, engineering science, and theoretical principles. Earlier engineering graduates were considered stronger in problem-solving, engineering drawing and graphics, and engineering design. Engineers, in general, were thought to be weak in communication skills, supervisory skills, economic analysis, and general or liberal education.

10. (Additional findings and more specific findings are available in the report of this study.)

COMMENTS

The results of this survey are very enlightening and hold a great deal of promise for people involved in counseling potential engineers and for people concerned with engineering curricula.

RECRUITER

157.

Who Should Recruit?

Athos, A. G. (1966) Study #1

What are the effects of various characteristics of recruiters (age, seniority in company, functional area within company, and type of industry employing him) on the favorableness of the recruiter's description of the company?

POPULATION AND SAMPLE

"In all, 548 students from 32 colleges and graduate schools returned usable questionnaires, of which 378 gave permission for their recruiters to be contacted. Of the 718 recruiters who were sent questionnaires, 297 usable responses were returned. . .Of the above returns, 122 were from men employed by 61 companies, each company being represented by two recruiters. Thus, data were available both across companies and within companies; only the 122 returns from 61 companies are used for this analysis." (The report of the study gave no indication of the number of questionnaires sent to the students.)

INSTRUMENTATION AND DATA

A questionnaire composed of 212 declarative statements was sent to the recruiters. The recruiters were asked to rate each statement on a scale from 0 through 7, according to the degree to which the statement applied to the company (the lower the score, the less applicable the statement).

Of the 212 statements, 111 were identified as having a quality of goodness or badness; 87 were good, 24 were bad. "If a recruiter was very favorable, most of his answers to the 87 good items should be closer to 7 than 0, and most of his answers to the bad items should be closer to 0 than 7." The total value of bad responses was subtracted from the total value of the good responses.

DESIGN AND ANALYSIS

The data were first analyzed across all companies, without regard for the 61 sets of recruiters. The favorability scores were compared by function, seniority, age, and employing industry of the recruiters.

A second analysis was made by sets of recruiters to investigate the influence of age, while holding the other variables constant.

RESULTS AND DISCUSSION

1. Results across companies showed: (a) little variance in favorability scores by function, (b) an increase in favorability with an increase in the seniority of the recruiter, (c) little variance by the industry employing the recruiter, and (d) little variance by the age of the recruiter.

2. In the analysis by sets of recruiters within companies, only 25 sets showed sufficient age difference to be included. Results showed that in 66% of the comparisons, older recruiters presented their companies in a more favorable light than younger recruiters. Differences in the degree of favorableness across the two recruiters in each set were generally greater when the older man was the more favorable.

3. The analysis by seniority included 22 sets of recruiters. In 18 of the 22 sets, the man with seniority was the older man. Similar results were found as reported earlier; i.e., the older, senior recruiter was more favorable in 66% of the comparisons.

4. Eleven sets of recruiters were studied for the effects of function. Of the 11 sets, eight included a personnel man. In seven of these instances, the personnel man was the more favorable.

COMMENTS

It appears that favorability of description of the company may correlate with the age, seniority, and function of the recruiter. However, the favorableness of a description may not be as important as an accurate or realistic description when recruiting college graduates, considering the philosophy of today's graduates to "say it like it is."

158.

How Important Is the Recruiter?

Athos, A. G. (1966) Study #2

What are the kinds and degrees of similarity in recruiters' descriptions of the same company?

POPULATION AND SAMPLE

The sample included recruiters from 61 companies. (For further description of the sample, see Athos, A. G. "Who Should Recruit?" 1966).

INSTRUMENTATION AND DATA

Two sets of data were collected in this study. The first set contained 122 descriptions of 61 companies (two descriptions per company). Each description was composed of 212 declarative sentences which were rated by the recruiters according to how applicable the statement was to their company. The rating utilized a scale from 0 to 7; 7 represented high applicability.

The second set of data was similar to the first, except that the recruiters rated a company other than their own and were then compared with a recruiter from still a third company (recruiters from companies A and B rated C and comparisons were made).

DESIGN AND ANALYSIS

The first set of data was labeled "same-company," the second set, "different-company."

The design of the study compared the rating profiles of the "same-company" sets and the "different-company" sets. Three aspects of the profiles were considered: elevation, dispersion, pattern.

Elevation was concerned with average value between 0 and 7 on the rating scale. It was predicted that the differences in elevation would be smaller in the "same-company" comparison than in the "different-company" comparison. Dispersion investigated the standard deviations about the average value on the rating scale. "Same-company" ratings were predicted to have smaller standard deviations than the "different-company" ratings. Pattern examined the shape of the profile (ups and downs). "The operation used here is to compare the average correlation coefficients across all 212 items, between all pairs of two descriptions of the same company, and all pairs of two descriptions of different companies."

RESULTS AND DISCUSSION

1. The average mean difference for the "same-company" comparison was .48, compared to .57 for "different-company." This difference was not significant.

2. The mean difference in standard deviation for the "same-company" was .35, compared to .36 for "different-company" comparisons. Again, this difference was not significant.

3. The mean coefficient of correlation for the "same-company" sets was .56, compared with .46 for "different-company" sets. This difference was significant at the .001 level, and it indicates a definite company effect on the recruiter ratings of the same company.

COMMENTS

None.

159.

Interviews: The Eye of the Beholder

Hakel, M. D. and Mannel, C. H. (1968)

Can interviewers accurately identify the distinguishing characteristics of a particular occupational group?

POPULATION AND SAMPLE

"The 'Interests of Accountants' test was administered to 37 interviewers who were recruiting accounting majors. While 23 of these interviewers were CPA's, none of the remaining 14 were accountants, nor had they been trained in accounting. Twenty male students, only four of whom reported that they had ever been interviewed for employment, also completed the test." (The report of the study provided no additional information on the selection of the interviewers or accounting majors.)

INSTRUMENTATION AND DATA

The instrument used in the study was the "Interests of Accountants" test. It was a checklist of many items taken from the data gathered when the CPA scale of the Strong Vocational Interest Blank was revised in 1966. The checklist included lists of occupations, school subjects, types of work, activities (recreational), and kinds of people. The respondents selected several items from each list which, in their judgment, best described an accountant. The highest possible score was 21.

DESIGN AND ANALYSIS

Both groups (the interviewers and the students) were administered the test. The mean scores for the groups were compared. A factor analysis was completed to separate the respondents into groups on the basis of the items they checked most frequently.

RESULTS AND DISCUSSION

1. The average score of CPAs was 12.2, compared to 12.3 for the employment interviewers, and 11.5 for the students.

2. The factor analysis identified two clusters of respondents according to which items they selected. One cluster contained 10 CPAs. This group rated accountants as liking the following items more than others: occupations of airplane pilot, author, judge, military officer; people who are natural leaders; interviewing clients; changing activities; hunting; and golf.

The second cluster (15 students and 4 CPAs) preferred the following items: occupations of office manager, buyer of merchandise, advertising man, draftsman; calculus; solving mechanical puzzles; making radio or hi-fi set; methodical work; and people who have made fortunes in business.

COMMENTS

If two such different groups (considering their perceptions of accountants) end up with nearly the same total scores on an instrument which should be sensitive to the differences, either the test has no value, or the use of subtest scores is indicated rather than the total.

The size of the sample of raters, as well as the sample of items, is certainly a limiting factor to the reliability of the study. A much larger sample of raters and items is needed before subtest scores (or patterns of responses to sets of items) can be used.

160.

Successful Campus Recruiting

Marks, B. K. (1967)

What are the methods used by the more successful campus recruiters in the recruitment of business administration majors?

POPULATION AND SAMPLE

"A questionnaire used to select 15 effective recruiters was sent to 144 of the 286 recruiters listed as members of the Southwest Placement Association in the 1964 roster. Of the 130 responses, 57 were usable for purposes of the study. Information obtained was applied to the rating system for selection of the 15 recruiters used in the study." (No further information was given in the report of the study as to the rationale of the sample selection process.)

INSTRUMENTATION AND DATA

A rating system for evaluating recruiter effectiveness was developed by polling practicing recruiters for suggestions. From the suggestions, the following four major factors were identified and weighted according to relative importance: (1) ratio of job acceptances to job offers extended (weighted 25%); (2) ratio of those hired who were successful (in the sense that the company was satisfied with their work performance), to the total number hired (weighted 15%); (3) ratio of those hired who were successful, and who stayed with the company for more than one year, to the total hired who were successful (weighted 10%); and (4) ratio of acceptances for second interviews to the total offers made to applicants for second interviews (weighted 50%).

(A description of the questionnaire completed by the recruiters was not provided in the report of the study.)

DESIGN AND ANALYSIS

The study was limited to the response received from a questionnaire. There were 144 questionnaires mailed, and 130 returned. Only 57 of the returned questionnaires were usable. The rating system was then applied to select the 15 recruiters to be used in the study.

The data were not treated statistically, but were simply reported in percentages.

RESULTS AND DISCUSSION

1. Of the 15 recruiters, 14 favored a planned in-depth interview, and reported that their approach did not vary from candidate to candidate.

2. Ten of the 15 indicated that they took notes during the interview. They felt that note-taking did not detract from the interview.

3. Eighty-seven percent of the recruiters made some type of pre-interview contact with the student.

4. Eighty percent of the 15 recruiters in the study made post-interview contacts before returning to their companies. These took the form of a dinner engagement, a second interview, or other means.

5. At least half of the recruiters indicated that they discussed these four topics in their interviews: (a) promotion opportunities, (b) company training program, (c) company history, and (d) fringe benefits.

6. All of the recruiters reported that they took no more than two weeks to contact a candidate who looked promising.

COMMENTS

The recruiters in this study were evaluated to be more successful than the average college recruiter. The study would have been strengthened if this group had been statistically compared to the data already available on the 42 unused questionnaires; i.e., those not selected from the 57 usable questionnaires. The fact that only 57 of the 130 questionnaires returned were usable suggests that there was something lacking in the questionnaire which made adequate response difficult. Caution is suggested in interpreting this study.

DECISION-MAKING

IDENTIFICATION AND SELECTION

161.

An Exploration of Engineers' and Scientists' Motives as Related to Job Performance

Anonymous (1964) Study #2

What is the relationship between job motivation of engineers and scientists and job performance?

POPULATION AND SAMPLE

The sample was selected from all non-supervisory, non-Ph.D. technical personnel of a large research and development corporation. Selection was made on the basis of octile rating of job performance. Two hundred and fifty employees were included in octiles 1 and 2, hereafter called "high rated," and another 250 employees were included in octiles 7 and 8, hereafter referred to as "low rated."

INSTRUMENTATION AND DATA

A 77-item job importance survey was used to collect the data for this study. The instrument asked each employee to rate the importance to him of items dealing with the job situation. Each item was rated on a 5-point scale, 5 being "very important" and 1 being "very unimportant."

DESIGN AND ANALYSIS

Analysis of the data included: computation of group means for each item, computation of means of total sample for each item, item intercorrelation, correlation of each item with performance rating, and factor analysis of a 78x78 correlation matrix.

RESULTS AND DISCUSSION

1. Results of item rating showed that "high rated" employees were significantly higher than the "low rated" group in the way they rated items dealing with applied work and status. The opposite was true for items dealing with job security, personal comfort, and a research atmosphere.

2. Point biserial correlations between items and performance rating showed that top performers saw themselves as interested in goal-oriented work, desirous of a heavy work load in which they can busy themselves with all of the details and then see the application of their work efforts."

Low performers describe themselves as being research-oriented, seeking to learn new skills on the job, and wanting to try out new techniques.

3. Items rated as most important by both groups were found to fall into two main categories: (a) high company prestige and good public relations, and (b) a position of worth in the eyes of their co-workers and an opportunity to try new ideas and techniques.

4. Factor analysis of the 78x78 intercorrelation matrix identified nine motivational patterns. These patterns were: importance of status achieved by becoming a supervisor (Factor 1), importance of a research atmosphere (Factor 2), importance of a materially secure environment (Factor 3), importance of status which allows personal expression with immunity from consequence (Factor 4), importance of autonomy (Factor 5), importance of an atmosphere which allows a casual approach to the job (Factor 6), importance of the job situation which allows tangible output (Factor 7), importance of a job which inherently manifests status and its trappings (Factor 8), and importance of organizational efficiency (Factor 9).

5. The two factors rated as most important by both groups were factors 2 and 4. Factor 8 was rated lowest by both groups.

COMMENTS

A complete description of the sample was lacking in the report of the study. The extent to which these results are applicable to other companies cannot be determined. Companies interested in the same or a similar question should collect their own information to establish whether or not a similar set of results would be found.

162.

Selecting the Potentially Creative Scientist

Chambers, J. A. (1964)

What factors are useful in the selection of potentially creative scientists?

POPULATION AND SAMPLE

The sample included 740 male scientists (400 chemists and 340 psychologists). One-half of the individuals from each field were selected for having achieved eminence as research scientists. Eminence was determined by: (a) membership in the National Academy of Sciences or American Philosophical Society, (b) name starred in *American Men in Science* (1903-1943), (c) authorities listed in *Who Knows—and What* (1954), (d) *Who's Who in America* (1959), (e) membership list of the Society of Experimental Psychologists, and (f) a list of well-known psychologists identified and studied earlier by Clark (1957).

The control groups were selected from the membership lists of their professional societies, with those listed in the above sources excluded. The control-group scientists were matched with the eminent scientists on the basis of age, level of education, and opportunity for research. A questionnaire was sent to each one, and approximately 60% (N=438) of the questionnaires were returned.

INSTRUMENTATION AND DATA

The instruments used included: an 81-item Biographical Inventory developed by the investigator; Factors E (dominance), F (enthusiasm), H (adventureness), M (creativity), and Q_2 (self-sufficiency) of Cattrell and Stice's (1957) 16 P.F. Questionnaire; items 51-75 of Maslow's (1952) Security-Insecurity Inventory; and the Initiative Scale from Ghiselli's (1954-55) Self-Description Inventory. The instruments were mailed to each scientist.

DESIGN AND ANALYSIS

The four subgroups (eminent chemist, eminent psychologist, control chemist, control psychologist) were each divided at random into two groups. Approximately one-third of the individuals from each subgroup were combined into Group I; the remaining two-thirds, into Group II.

Those items from the Biographic Inventory which were identified statistically (*t* tests and chi-square) as being the most promising discriminators between the eminent and control scientists (53 items discriminated psychologists and 48 discriminated chemists) were retained and used in the revised Biographical Inventory. The tests for Group II were rescored using these items.

RESULTS AND DISCUSSION

1. Creative or eminent psychologists scored significantly higher than the control psychologists on Factors E (dominance) and Q_2 (self-sufficiency) of the 16 P.F. Questionnaire (significant .05 level). Eminent psychologists also scored significantly higher on the Ghiselli (initiative scale) and the Biographical Inventory (.05).
2. Creative or eminent chemists scored significantly above control chemists on the E, Ghiselli, and Biographical Inventory factors. All were significant at the .05 level.
3. Using the revised Biographical Inventory as a screening device for Group II measures, 15% of the control group was eliminated without eliminating a single eminent scientist.

COMMENTS

The possible use of weighted biographical information as a screening device for creative potential has proven effective in other studies to identify and predict certain abilities. This study could be replicated using creative and non-creative individuals from other fields to see if these results hold up.

163.

The Validity of a Personnel Interview

Ghiselli, E. E. (1966)

To what extent can superficial measures of achievement and experience obtained through the job interview predict future success in the position?

POPULATION AND SAMPLE

The population for this study included 507 applicants for stock broker positions over the 17-year period from November 1945 to November 1962. The applicants were all quite homogeneous in terms of age, education (level and field), military service (officers), extracurricular activities in college, and previous work experience. "Although the men themselves were rather homogeneous, the conditions under which they operated were quite heterogeneous." Of the 507 applicants, only 275 (54%) were hired. "In general, those men to whom the highest interview ratings were assigned were hired."

INSTRUMENTATION AND DATA

The data were gathered through personnel interviews conducted by the author, a psychologist. The interviewer was given no prior information about the applicants except name and the branch office for which the applicant was being considered. The interview lasted only one hour. During this time the interviewer collected whatever information he felt pertinent. No questions of a personal nature were allowed.

Upon conclusion of the interview, the interviewer immediately evaluated the applicant and submitted the evaluation to the management of the organization. The applicants were given a rating from 1 to 5.

DESIGN AND ANALYSIS

"Only those men approved of by the personnel officer and the managers were seen by the author. Thus, the applicants seen by the author in the employment interview were already highly screened."

The success criterion, or "The criterion of job proficiency was survival with the company for a three-year period."

The biserial coefficient of correlation between job proficiency and interview ratings was computed for the 275 men who were hired.

RESULTS AND DISCUSSION

1. The standard deviation for the mean ratings of the 507 applicants was 1.25, compared with .77 for the 275 who were hired.
2. The biserial correlation was .35. When corrected for restriction of range, the correlation increased to .51.
3. "In conclusion, then, it can be said that the ordinary personnel interview is not necessarily and invari-

ably invalid, but rather that its validity may be at least equal to, if not greater than, the validity of tests."

COMMENTS

The success criterion seems to be rather gross. A better criterion may have been the annual earnings, since they were mentioned by the author as being a direct reflection of the success as a financial adviser.

This study sampled only one interviewer—a psychologist. The results may not represent what other interviewers would have concluded, especially those with less training. The possibility of generalizing these data is probably very limited.

164.

Characteristics of Judged High Potential Management Personnel—The Operations of an Industrial Assessment Center

Hardesty, D. L. and Jones, W. S. (1968)

What are the characteristics of judged high potential management personnel?

POPULATION AND SAMPLE

The sample consisted of 133 male employees who participated in one of several three-day sessions at the assessment center of a large midwestern oil company. They were all professional and managerial personnel ranging in age from 25 to 40. Almost all of them were performing well above the expectations of their respective supervisors.

INSTRUMENTATION AND DATA

The instruments included a series of pencil and paper tests: Miller Analogies Test; School and College Ability Tests (SCAT), which includes total, verbal, and quantitative scores; Doppelt Mathematical Reasoning Test; Minnesota Engineering Analogies Test; Davis Reading Comprehension and Speed Scales; Michigan Vocabulary Test; Dogmatism Scale; and the Watson-Glaser Critical Thinking Appraisal. The following were also used: personal interviews, recorded performances during situational exercises, sociometric rankings completed at the end of each of the three situational exercises, sociometric rankings completed at the end of the assessment session, and extensive personal history information forms. The projective tests used were the Thematic Apperception Test (TAT), and Sentence Completions Test.

DESIGN AND ANALYSIS

The approach of the assessment center was to collect and generate relevant information on employees, then provide this information in the form of assessment reports to the company managers for their use in making a variety of placement decisions. The two real advantages of the assessment information are that it provides a variety of items upon which placement and personnel decisions can be made, and it provides a possible source of information for job modifications necessary for more effective operations.

The staff of the center consisted of one Ph.D. industrial psychologist, one Ph.D. clinical psychologist, and three top-level managers. They independently rated each employee on the basis of all available information. Any appreciable differences in the ratings for each employee were resolved by re-examination of the data and a brief discussion among the staff.

The final rating (an average of the five independent ratings) represented the employee's probable future level of attainment within the company. Level of attainment was outlined in terms of salary grades and organizational level. Employees rated as having potential in the upper-middle management level and above were classified as judged high-potential. The other employees were placed in a comparison group.

Data were analyzed using analysis of variance and one-tailed *t* test of significance. Intercorrelations were computed for the pencil and paper tests and the potential ratings. Chi-square analysis was used to test the significance of the difference for the sociometric rankings.

RESULTS AND DISCUSSION

1. Employees judged high-potential did not score significantly different from the other employees on the dogmatism scale.
2. Employees judged high-potential scored significantly higher than the other employees on each of the following measures: SCAT-total (.01), SCAT-verbal (.01), SCAT-quantitative (.01), Doppelt Mathematical Reasoning Test (.01), Minnesota Engineering Analogies Test (.01), and Davis Reading Comprehension and Speed Tests (.01).

   They also scored significantly higher on the following scales of the Michigan Vocabulary Test: human relations (.05), physical science (.05), mathematics (.05), and the total of all scores (.05). No significant differences were found between the two employee groups on the following Michigan Vocabulary Test scales: commerce, government, biological sciences, fine arts, and sports.
3. Employees judged high-potential dominated the the top 25% of the sociometric rankings in areas dealing with efficiency, drive, and leadership. (Chi-square was significant at the .05 level.)
4. Employees judged high-potential were significantly above the remainder of the group on sociometric rankings in the areas of salesmanship, making friends, and being a nice guy.
5. The judged high-potential employees were rated higher on the following scales: business motivation (.01), oral communication (.01), assertiveness (.01), and compatibility (.01).
6. Projective tests were not analyzed for this report.

COMMENTS

The validity of the assessments cannot be known until the employees have been observed in the future to determine if the predictions were correct concerning their potential with the company. Thus, while information is gained about the characteristics of personnel judged high in management potential, it is impossible to know how accurate or useful these judgments are in making personnel decisions. Follow-up studies of this group or similar groups will be difficult because personnel judged high in management potential are likely to have greater opportunities than personnel not rated high.

The lack of a theoretical statement about how the judging of management potential takes place, or what factors affect it, makes it difficult to use these data for anything other than a description of the characteristics of a small, possibly atypical group of potential managers as judged by a small, possibly atypical group of raters.

165.

Selection of American Managers for Overseas Assignments

Ivancevich, J. M. (1969)

What personal factors are most important in screening managerial candidates for overseas positions?

POPULATION AND SAMPLE

Questionnaires were distributed individually to 326 foreign operations managers of United States firms operating overseas (215 responses; only 127 were usable), and 300 American managers working overseas in the largest American-owned industrial firms (151 responses; only 127 were acceptable). The foreign operations managers were responsible for selecting American managers to work overseas.

INSTRUMENTATION AND DATA

Two questionnaires required the respondents to rate 14 job-related, technical and behavioral factors: independence, sincerity, technical knowledge, attitude toward non-Americans, wife's opinions about overseas job, desire to go abroad, ability to train foreign nationals, adaptability, domestic record of performance, over-all health, foreign language, interest in culture of the foreign country, previous overseas experience, and age. The rating employed a scale ranging from 1 to 7. A high rating denoted strong opinions concerning the importance of that factor as a screening device in selecting foreign managers.

DESIGN AND ANALYSIS

Comparisons were made between mean rating scores for the foreign operations managers and the American managers on each of the 14 factors. The *t* test of significance was applied to the differences.

RESULTS AND DISCUSSION

1. Significant differences were found between the mean ratings of foreign overseas managers and overseas American managers in five out of 14 factors. Foreign managers' mean scores showed more emphasis on independence, technical knowledge, desire to go abroad, and domestic record. American managers scored significantly higher on only one factor, wife's opinion.
2. Both groups rated interest in culture, previous experience, and age as the least important factors, with ratings below 4. All other factors were given ratings of 5 or better.

COMMENTS

None.

166.

Predictor Variables for Creativity in Industrial Science

Jones, F. E. (1964)

What measures can be used to identify and predict creativity in industrial science and technology?

POPULATION AND SAMPLE

The sample included 88 male, salaried employees of a large chemical plant. They were involved in one of three basic areas: research and development (61%), production and miscellaneous (29%), and sales and advertising (10%). All were college graduates, and many held advanced degrees. Scores on the California Short-Form Test of Mental Maturity showed 28% were very superior (IQ 130-up), 49% were superior (115-129), 19% were high average (100-114), and three cases were low average (85-99). (No explanation of the sampling techniques was provided in the report of the study.)

INSTRUMENTATION AND DATA

Twelve descriptors (criterion of creative performance) were rated by 25 managers according to their relevance to productive creativity with the company. The descriptors and their relative weights were: analytical mindedness (2), communicativeness (1), idea mindedness (8), level of energy (6), liking for problems (8), organization in work (1) originality (10), perseverance (2), personal relations (-2), practical mindedness (3), self-reliance (3), and technical competence (6).

Each of the employees was then rated on each of the descriptors using a 100-point scale. The distribution of 88 scores was converted to a 50-point scale with a range of scores from 11.9 to 43.7, with a mean of 32.6 and a standard deviation of 7.1. The median of 34.6 was used to divide the employees into more creative and less creative groups. Test-retest reliability of the ratings was found to be .88.

Fifty-three different scales from various tests were used to measure one definite factor or factor-like entity each. These 53 measures were used as the predictor variables. A partial list of the scales or tests used included: the California Short-Form Test of Mental Maturity (CTMM), the Culture Free Test, Miller Analogies Test, the Logical Reasoning Test, the Doppelt Mathematical Reasoning Test.

DESIGN AND ANALYSIS

All employees were tested in three different groups over a 17-month period. In all three testing groups, the sub-groups were equated for equal Ns and other variables, as nearly as possible. The subgroup mean difference in criterion scores decreased intentionally from the first to the last testing group. In order to qualify as a predictor, a test variable had to differentiate through the three separate test groups with all mean differences (in test scores) between sub groups more creative and less creative being of the same sign (either plus or minus), and differentiate over-all, when the respective subgroups were pooled, according to a point-biserial coefficient of correlation equal to .25 or greater.

RESULTS AND DISCUSSION

1. Of the 53 test variables evaluated, nine were selected as valid predictors of creativity, according to the established criteria. Five of the variables were types of attitudes, while the remaining four were aptitudes.

2. The five predictor attitudes were all part of the 16-factor Personality Factor Questionnaire: emotional stability (C), dominance (E), venturesomeness (H), experimenting attitude (QI), and guiltproneness (O). Guiltproneness correlated negatively with creativity, -.307.

3. The four predictor aptitudes were: LR (CTMM subtests 3 and 4 combined with Logical Reasoning Test), MR (Doppelt Mathematical Reasoning Test combined with Minnesota Engineering Analogies Test), IF (Ideational Fluency Test), and ORIG (Consequences Test combined with Rensselaer Test of Creative Thinking).

COMMENTS

The variables identified in this study may have predictive power only for productive creativity in the company studied, since all subjects and ratings were internally related. However, creativity may be creativity wherever it is found, and these results may have value for other investigators interested in identifying creative ability.

167.

Current Trends in Recruiting Practices

Ma, J. C. (1969)

How much emphasis do companies place on selected factors in the recruitment process?

POPULATION AND SAMPLE

The sample included 94 companies selected from those which recruited business majors at San Jose State College during the two years prior to the study. (The report of the study did not explain the methods or criteria of selection.)

INSTRUMENTATION AND DATA

The companies were surveyed to determine their attitudes in relation to: grades in college, personality, degree of self-support by the student through college, marital status, and military status; and how heavily they weighted each item in the recruitment process. (The report of the study included no further description of the method of survey or of the instrument which was used.)

DESIGN AND ANALYSIS

Responses to the survey were compiled and the results reported as averages, totals, and percents. (No explanation of statistical procedures was given in the report of the study.)

RESULTS AND DISCUSSION

1. Most companies stated that grades between 2.00 and 3.00 were acceptable (using a 4.00 scale).

2. About two-thirds of the companies considered students with average grades, if they were working while in school.

3. About 86% of the companies considered extracurricular activities in their evaluations.

4. Work experience was listed as non-essential by 70.2% of the companies, 27.6% said it was preferred, and 1.1% said it was essential.

5. Personal traits listed as important were: good character, an outgoing personality, and ability to use good English.

6. About 84% of the companies felt that personality traits were very important.

7. Two-thirds of the companies did not give psychological tests to the interviewees.

8. About 66% of the companies considered personality traits as the most important factor, followed by college grades, work experience, and extracurricular activities, in that order.

COMMENTS

These results are descriptive of the recruiting practices of a number of selected companies. The sample was not representative of all companies, and therefore, only to the extent that other companies have similar goals as those studied can the results apply.

Several of the factors considered important by recruiters have not been shown to be good predictors of success, continued performance, etc. Certainly, further research and careful consideration of the recruiting process are needed.

168.

The Middle 60%—An Untapped Gold Mine?

Manning, H. L. and Cato, W. H. (1964)

What is the relationship between industrial placement factors and grade index?

POPULATION AND SAMPLE

The sample included all industrial engineers who graduated from Virginia Polytechnic Institute in June 1963 and accepted positions in industry. The sample excluded those entering graduate school, military service, government service, and any student who completed degree requirements before June 1963. The total number studied was 25.

INSTRUMENTATION AND DATA

Each graduate's four-year cumulative grade index was obtained. The number of job interviews, job offers, and salary offers were also collected.

DESIGN AND ANALYSIS

Graduates were ranked according to their four-year index, and again by their final two-year index. Comparisons were made between the two index rankings, and between rankings and such placement factors as: number of job interviews, number of job offers, salary offers, and salaries accepted. (The report of the study did not indicate the statistical treatment of the data.)

RESULTS AND DISCUSSION

1. There was a lack of stability among the middle 60% of the subjects (N = 15) on the four-year ranking, compared to the two-year ranking. This suggests that some good potential employees in the middle 60% are being overlooked because of their ranking, in terms of four-year index.

2. There was an average of 17 interviews per student. The top 20% of the graduates (using the four-year index) received a higher ratio of job offers to interviews than the other graduates. They also received higher average maximum and minimum salary offers than the others.

3. Salary accepted was not related to index ranking.

COMMENTS

No explanation of statistical procedures was provided in the report of the study. The small number of students and the lack of statistical tests make these data difficult to interpret. Restricting the sample to one school limits the value of generalizing these findings.

169.

Grades + Activities = Financial Success

Mason, R. D. (1965)

What is the relationship between activities and grades and later financial success?

POPULATION AND SAMPLE

A questionnaire was sent to business administration majors who graduated from the University of Toledo (Ohio) between 1932 and 1964. Approximately 50% (N = 1,200) of the questionnaires were returned and included in the results of the study.

INSTRUMENTATION AND DATA

The instrument used was a questionnaire which contained 70 items pertaining to biographical factors, such as father's occupation, work during college, shifts in college major, and others.

DESIGN AND ANALYSIS

A median split for current salary level divided the individuals into two groups. Chi-square analysis was used to study the influence of scholastic achievement in college with subsequent success reported as income level. (A relationship was observed between length of time since graduation and median income level. The report of the study did not indicate if a correction for length of time was made in comparing salary level with college grades.)

A series of comparisons were made on the sample. These included career changes, types of employing companies, location of companies, etc.

RESULTS AND DISCUSSION

1. "Background and scholastic achievement of the alumni had no relationship whatsoever with their types of occupations and degree of financial success."

2. No relationship was found between extracurricular activities and economic success.

3. (Other results were reported, but they did not appear to be relevant to the problem and were omitted from this abstract.)

COMMENTS

The stated problem for this study received only passing attention in the report. If no correction was made for length of time since graduation, the effects of time might mask any effects of scholastic achievement on salary level. One would expect differences in the GPAs of the old group, as well as young. The C+ student of 1935 could be compared to the A student of 1935 as properly as the C+ and A student of 1970.

170.

Who Succeeds? A Study of Background Characteristics of Engineers Associated With Success in Different Fields of Engineering

Meyer, H. H. and Cuomo, S. Q. (1962)

What are some background characteristics associated with success of engineers in differing fields of engineering at General Electric Company?

POPULATION AND SAMPLE

The population was defined as 1,360 recent college graduate engineers hired for the Engineering and Technical Marketing Training Programs at General Electric Company during 1954, 1955, and 1956.

The results of an annual survey, conducted by the accounting department for the purposes of salary administration, revealed that 720 of the original 1,360 engineers (53%) were still employed by G. E. at the time of this study (1961). The engineers were classified into four major groups, based on job type and function: (1) advance engineering (marketing), N = 235; (2) design engineering, N = 213; (3) production engineering, N = 157; and (4) sales engineering, N = 95. Twenty engineers were unclassified.

INSTRUMENTATION AND DATA

As part of their orientation program, all new engineers with G.E. were required to take a battery of tests, which included measures of general ability, verbal reasoning, mathematical ability, engineering knowledge, and spatial relations. (The titles of these instruments were not supplied in the report of the study.) They were also asked to supply background information, such as college class standing and college activities. The data included recruiter ratings of each student. Each new engineer was interviewed and personally evaluated on the basis of 50 ability and personality traits, such as basic abilities, motivation, interests, and personality. Salary, compared to other G.E. engineers of similar age, was the criterion for success.

DESIGN AND ANALYSIS

Profiles for each job group were constructed using the variables defined above. The group profiles were compared to determine which variables, if any, were characteristic of each of the four job groups. All profiles were constructed using mean scores determined for all engineers as the points of reference.

Relationships between background characteristics and 1961 salary level were determined. (Statistical procedures used in determining relationships were not explained in the report of the study.)

RESULTS AND DISCUSSION

The results of the profile comparisons revealed characteristic differences between each of the four job groups. These differences were as follows:

1. The advance engineers, as a group, were consistently above the over-all means for all variables listed. They showed less fluctuation in their scores, from item to item, than any other group. Their strongest points were class standing in college and the abilities measured (all abilities were fairly equal). Their weak points were: number of college activities, motivation and interests, personality, and spatial relations. Advance engineers were highest of all groups on the salary level scale.
2. The design engineers, as a group, showed more similarity to the over-all mean scores than any of the other three groups. Significant departures above the means occurred on: standing in college, engineering knowledge, and spatial relations scales. The only major departure below the means was on the number of college activities scale. Design engineers were slightly below average on the salary level scale.
3. The production engineers were below the mean scores for all groups on all scales, except motivation and interest (they were at the mean on that scale). They were the lowest for all groups on the salary level scale.
4. Sales engineers displayed the greatest amount of variance from the means on many of the scales. The strongest characteristics of sales engineers were personality and over-all interview rating. They were the lowest of all groups on scales of ability, knowledge, and college class standing.

The background characteristics, as related to achieved salary level, revealed the following results: (a) high scholastic achievement was strongly related to subsequent salary success; (b) extracurricular participation in college, expressed interest in research and development, performance on ability tests, and interview ratings all showed strong positive relationships to subsequent salary success.

"The findings portrayed tell us nothing about how these engineers would compare to all engineers, or even to all engineers employed by the General Electric Company. Since we know from other studies that most of the engineers employed by General Electric score well above average on such ability measures as tests and college performance. . ."

COMMENTS

Although G.E. engineers are reported to be an unusual group in terms of measures of ability and achievement, the results showing difference between the job groups may still be found across the same job groups using a more representative sample. If these differences can be reproduced under similar circumstances, then the results of this study do have considerable potential for counseling prospective engineers.

171.

Background Characteristics of Engineers Associated With Major Changes in Rate of Salary Progress

Meyer, H. H. and Cuomo, S. Q. (1963)

What are the distinguishing characteristics of engineers who were not highly rated early in their careers, but later achieved significant success, as measured by changes in their relative salary status?

POPULATION AND SAMPLE

The population was defined as 1,360 recent college graduate engineers hired for the Engineering and Technical Marketing Training Programs at General Electric Company during 1954, 1955, and 1956.

The results of an annual survey, conducted by the accounting department for the purpose of salary administration, revealed that in 1958, 880 of the original 1,360 graduate engineers were still employed by G.E. The results of the 1961 survey showed that 720 of the engineers were still with the company.

INSTRUMENTATION AND DATA

As part of their orientation program, all new engineers with G.E. were required to take a battery of tests which included measures of general ability, verbal reasoning, mathematical ability, engineering knowledge, and spatial relations. (The titles of the instruments used were not provided in the report of the study.) They were also asked to provide background information, such as college class standing, college activities, and other similar information. Recruiter ratings of each student were also a part of the data collected in the original study. Each new engineer was interviewed and personally evaluated on the basis of 50 ability and personality traits. Some of these traits were theoretical ability, creative ability, personality, general manner, and appearance.

DESIGN AND ANALYSIS

The engineers were classified into one of four groups, based upon their relative salary status in both the 1958 and 1961 surveys. The four groups were: low-to-high (64 engineers who went from the bottom third of their class in 1958, to the top fourth of their class in 1961), high-to-low (62 engineers who slipped from the top third of their class to the bottom fourth between 1958 and 1961), high-high (62 engineers who made essentially no change in relative position), and low-low (67 engineers who made no increase in relative position).

Comparisons were made between each of the four groups on each of the variables listed. Means and standard deviation were computed for the groups on each variable. The alpha level for the study was .05.

RESULTS AND DISCUSSION

1. Characteristics of engineers in the low-to-high group indicated that they received significantly higher

college grades, participated in significantly more college activities, and scored higher on ability tests than the other groups. Interviewers rated them high on theoretical ability, creative ability, personality, and general manner and appearance.

2. Characteristics of engineers in the high-to-low group indicated that they were significantly more likely to have been members of honorary fraternities, earned a greater percentage of college costs, had more previous work experience, were more likely to have completed military service, and had higher recruiter ratings. Interviewers had rated them higher on practical-technical know-how. This group, as a whole, scored relatively low on ability tests.

3. The characteristics of the high-to-high group were similar to those of the successful engineers described in G.E.'s first follow-up study report. The high-to-high group was significantly above the low-to-low group on all personal history items, except number of previous jobs and percent who had completed military service. With one exception, the high-to-high scored higher on all tests of ability and knowledge than any other group; the low-to-high group scored higher on spatial relations. The high-to-high group received high interview ratings on all scales, except practical-technical know-how (low) and experience (average). The low-to-low group received low or average ratings on all scales except practical-technical know-how (high).

COMMENTS

The data seem to indicate that the best predictors of future success with G.E. were the interviewer ratings, with the exception of the rating on practical-technical know-how.

The general superiority of the high-to-high group is not surprising. The characteristics of the low-to-high and high-to-low groups bear a closer look. In general, it appears that the high-to-low group (which seems to have been overrated in the beginning) is characterized by more practical experience in engineering, by a higher percent who had military service, and by having been in honorary scholastic groups. This pattern suggests that they were mature, and that this maturity resulted in the interviewers' higher ratings. Their grades were relatively low.

The low-to-high group is marked by higher grades, higher tendencies toward theoretical and creative abilities, and pleasing personalities. Perhaps this combination of traits is what the interviewers should be trained to look for. In particular, grades appear to be a predictor of later success.

172.

Characteristics of Young Engineer Managers

Meyer, H. H. and Cuomo, S. Q. (1964)

What are the characteristics of men promoted to managerial positions early in their careers?

POPULATION AND SAMPLE

The population was defined as 1,360 recent college graduate engineers hired for the Engineering and Technical Marketing Training Programs at General Electric Company during 1954, 1955, and 1956.

"In 1963, the last quarter survey of college graduate personnel conducted by the Accounting Operations Department revealed that 666 of these men (49%) were still employed by the company. At that time, the group had an average of about eight and one-half years of service. This survey also revealed that 70 (10.5%) of the 666 engineers remaining were now in managerial positions."

INSTRUMENTATION AND DATA

As part of their orientation program, all new engineers with G.E. were required to take a battery of tests, which included measures of general ability, verbal reasoning, mathematical ability, engineering knowledge, and spatial relations. (The titles of these instruments were not provided in the report of the study.) They were also asked to supply background information, such as college class standing and college activities. In addition, the data included recruiter ratings of each student. Each new engineer was interviewed and personally evaluated on the basis of 50 ability and personality traits, such as basic abilities, motivation, interest, and various areas of personality.

DESIGN AND ANALYSIS

The characteristics of the 70 engineers who had become managers were compared with those of the 596 engineers who were hired at the same time, but were not in managerial positions at the end of 1963. (No description of the statistical procedures used was provided in the report of the study.)

RESULTS AND DISCUSSION

1. Managers showed less interest than engineers in the following areas: engineering subject matter, assembling equipment, membership in engineering societies, and in higher level jobs as an engineer. Those who became managers were less interested in employment at G.E. because of the jobs available in their field.

2. Managers showed stronger interest in subjects and activities outside of engineering than did the engineers.

3. The managers were given higher interview ratings on the following chracteristics: poise, self-confidence, aggressiveness, sophistication, business consciousness, status drive, education, and experience. The non-managers received higher interview ratings on drive for security, accuracy, and conscientiousness.

4. When the engineers were compared by job type and function (advance engineer—marketing, design engineer—design, production—production, and sales engineer—sales activities in the marketing function), it was found that 14.6% of the production engineers were managers, compared to 10% for the design engineer group, and 5.5% for the sales engineer group.

5. The results indicated that those engineers who became managers had characteristics similar to those engineers who left G.E. early in their careers.

6. No differences were found in academic achievement or abilities.

COMMENTS

The lack of information about the use of tests of significance in the report leaves open the possibility that the differences mentioned are chance differences. The fact that most reported differences occurred on rating variables suggests the possibility that the characteristics noticed by the interviewers may have also been noticed by those who control access to managerial positions and resulted in differential opportunity with respect to management.

The similarity between the managers and the engineers who left the company early suggests the possibility that the company is losing people who have real potential for management positions.

Caution is urged in generalizing these results to other companies.

173.

Letters and Resumes— What the Personnel Men Want

Peck, C. E. (1964)

What do employers look for in letters of application and resumes when hiring college graduates as salesmen?

POPULATION AND SAMPLE

"The survey is based on 106 usable questionnaires returned from 192 employers who listed in the College Placement Annual for salesmen with a non-engineering degree." (The report of the study provided no explanation as to how the 192 employers were selected, or if they constituted the entire population.)

INSTRUMENTATION AND DATA

The instrument used was a questionnaire specially designed to investigate the types of information that employers look for in the letters of application and the resumes of applicants who are seeking sales positions.

DESIGN AND ANALYSIS

The responses were tabulated and reported as trends or percentages.

RESULTS AND DISCUSSION

1. The following items were of interest to the employer: (a) extracurricular activities that suggest sales ability; (b) experience; (c) college courses showing applicant's interests; (d) grades; (e) other accomplishments indicative of motivation and achievement; (f) personal history; (g) ability to express qualifications in writing; and (h) other qualities, such as persuasiveness, maturity, stability, etc.

2. The following items produced an unfavorable impression when found in the resumes or letters of application: (a) poor presentation of qualifications (corny language, poor writing mechanics, and incomplete coverage), (b) wrong attitude about employment (emphasis on salary and fringe benefits), and (c) unfavorable personal traits (flattery, conceit, demanding, and instability).

COMMENTS

The results provide some suggestions for job applicants to consider when seeking a sales position.

174.

Factors Which Influence Careers in General Electric

Peres, S. H. (1966)

What is the influence of selected personal and organizational factors on the career progress of employees at General Electric Company?

POPULATION AND SAMPLE

A questionnaire was sent to 600 engineers from an original sample of 1,360 who, in 1965, were still employed by General Electric. Completed questionnaires were returned by 475 (79%) of the engineers. The respondents were employed in 112 different parts of G.E.

The original sample of 1,360 included a group of new college graduate engineers hired by G.E., in the middle 1950s, for the Engineering and Technical Marketing programs. This group of engineers took a battery of tests, completed biographical information forms, and were given evaluation interviews.

INSTRUMENTATION AND DATA

"A questionnaire was developed covering General Electric work history and self-report information or work motivation, problem-solving style, and career goals and objectives."

Five main areas of the questionnaire were identified in the study: organizational factor, problem solving, work orientation, job desires, and feeling of what pays off in working for G.E.

The success criterion was the relative salary level of each respondent in relation to other G.E. engineers of comparable age. These data were secured from an annual Accounting Operations survey.

A salary potential criterion was derived from 15 predictor variables of salary success. This was done in retrospect. In other words, the salary level of an individual at the time of the study was compared with his scores on 15 variables, which included test scores, interviewer ratings, and biographical data collected at the time of the original sampling. The four best predictors were the advanced mathematics test, the Minnesota Engineering Analogies Test, the American Council on Education General Ability Test, and the spatial relations test. Using all 15 variables, the respondent was classified as either above or below average in salary potential.

DESIGN AND ANALYSIS

Correlations were computed between the salary success criterion and each of the five areas covered in the questionnaire. Intercorrelations were made between the five areas.

"The sample was then subdivided into above and below average salary potential groups, with high or low salary success. The above analysis was re-run in order to find which of the self-description and work history statements significantly correlated to salary potential and subsequent salary success."

RESULTS AND DISCUSSION

1. High salary engineers compared to less successful engineers: (a) had a higher percentage of bosses who were promoted to high management positions, (b) worked in more departments, (c) had more immediate bosses, (d) participated in more Task Forces, and (e) considered a higher percentage of bosses as helpful.

2. High salary engineers tended to rate as most important those items dealing with work efficiency. The low salary engineers rated as important those items which showed a lack of initiative such as "Go by the book," "Support the majority opinion even if different from yours," and "Be an advocate of General Electric policy."

3. High salary engineers desired competition and the chance to prove what they could do. Low salary engineers were concerned with security in the form of automatic salary increases and seniority considerations in promotion.

4. In terms of problem-solving, the high salary engineers were creative and willing to work in the abstract, while the lower salaried engineers were again very cautious and slow to generalize results.

5. Eleven work-orientation patterns were identified: ambitious competitor, conformist, protective system seeker (seeks security), professional, company squire, task-oriented tiger, the analyst, the technician, the team man, the autonomy seeker, and the business-oriented achiever. The results showed that the high salary engineer was achievement oriented, and attracted to jobs where he could obtain satisfaction through the intrinsic content of the work.

6. Comparison of the job-desire items and salary potential revealed that high potential engineers were interested in professional achievement. The low potential engineers were interested in economic security.

7. The results of the payoff items rated important by both high and low potential engineers were consistent with ratings of high and low salary engineers.

8. In contrast to high salary engineers, the high potential engineers tended to work alone in solving problems, while the low potential engineers preferred working with others, as a member of a team.

9. Comparisons of work orientations and salary potential revealed some findings that were inconsistent with the other findings in this study. For example, of those work orientations associated with high salary success (business-oriented achiever, analyst, professional, task-oriented tiger, team man, and ambitious competitor), only business-oriented achiever, analyst, and professional were related to high salary potential. Company squire and protective system seeker were related to high salary potential, but low salary success.

10. The results show that work orientation may be the most valid indicator of success with G.E.

COMMENTS

These findings, for the most part, are consistent with findings of other studies. The high-salaried individual has been identified as the achievement-oriented individual, as opposed to the person concerned mainly with his security. The exceptions found in this study may be peculiar to G.E., and not found in replicated studies.

175.

Identifying College Graduates with High Potential for Advancement in Home Office Positions

Selover, R. B. (1967)

What factors are related to differences in advancement of college graduates employed by a major life insurance company?

POPULATION AND SAMPLE

Three samples were taken from the population of college graduates employed by a major life insurance company. The first sample included 118 college graduates hired by the company in 1956 and 1957 and still employed in the home office. This sample was used to determine which factors showed significant relationships to the number of promotions within the company.

Sample number two included 85 college graduates hired between 1952 and 1955 who were still with the company, and for whom the necessary personal information was available. The third sample included all college graduates (N=354) currently employed by the company, and for whom the personal information was available.

INSTRUMENTATION AND DATA

Data were gathered from personnel records compiled at the time of application for employment. The records contained the following information: schools attended, course work followed, extracurricular activities, previous work experience, and military service. Transcripts of credits showing courses taken and grades received were available for most employees. All applicants were required to take the regular selection tests used by the company, including verbal ability and quantitative reasoning tests. (Names of tests were not provided in the report of the study.)

DESIGN AND ANALYSIS

The data were correlated with the number of promotions for the employees in the first sample. Five measures showed significant relationship to the number of promotions: (1) scores on the quantitative reasoning and verbal ability tests, (2) academic success (college grade point average), (3) extracurricular activities, (4) leadership (number of offices held in college and rank in military), and (5) number of jobs held between graduation from college and employment by the company (inverse relationship).

The five significant measures were then combined into a single index based on weighted scores, depending upon the contribution of each factor to the total correlation. This score was referred to as the potential score. (A description of the Beta weights for each measure was not included in the report of the study.)

The potential scores for the other two groups were computed and compared with their promotions. Employees in sample two and three were divided into three groups (high, middle, and low), according to their potential scores. The number of cases in each group for samples two and three were: high—16 and 108; middle—55 and 180; and low—14 and 66, respectively.

Results were expressed in terms of percentages of each group above and below the mean number of promotions for that sample.

RESULTS AND DISCUSSION

1. The percentage of each of the three groups in sample two that were above the mean number of promotions was: 88% for the high potential group, 44% for the middle, and 21% for the low.
2. The results for sample three on percentages above the mean number of promotions were: 68% for the high group, 47% for the middle, and 32% for the low.
3. The longer the period of employment, the greater the relationship that existed between potential and promotions. (Individuals in sample two had been employed for a longer period of time than many in sample three. A complete description of sample three, in terms of time of employment, was not reported.)
4. Potential scores of 57 employees from sample three who had been promoted to manager revealed 70% were in the high potential group, 25% in the middle, and 5% in the low group.
5. Out of 45 employees who were dropped from a manager training program, 60% had low potential scores.

COMMENTS

Potential scores, as defined in this study, have validity for selecting high potential college graduates for employment within the company studied. The implied assumption that promotions are a result of superior contribution to the company is probably warranted. If so, then the use of potential scores in selecting personnel should lead to increased production per employee.

176.

A Managerial Selection Study

Spitzer, M. E. and McNamara, W. J. (1964)

What characteristics are related to managerial success, and how can they be identified early in an employee's career?

POPULATION AND SAMPLE

The sample included 102 of the 117 managers from four plants of the manufacturing division of International Business Machine Corporation. Only 18 were above the level of first-line manager. The 15 managers who were excluded were unavailable at the time of testing (vacations, etc.).

INSTRUMENTATION AND DATA

An interview was given to 16 managers. The interview schedule included six questions related to the manager's job. The responses were to be made in terms of specific behaviors, as opposed to characteristics of the more and less successful managers. A seventh question contained a list of 31 behaviors relevant to a manager's job. They were to rate each behavior according to the frequency the behavior was exhibited by good and poor managers. The rating employed a 3-point scale (usually does, sometimes, and usually does not).

The managers were then asked to select at least five of the items and list them in the order of their importance. Analyses of these data yielded several variables which discriminated between good and bad managers. Some of these variables were: supervisory interest, decision-making skills, employee vs. task orientation, mental ability to adapt to new situations, gather and organize information, and others.

The following tests were selected to measure the discriminating variables: Otis Self-Administered Test of Mental Ability; Leadership Opinion Questionnaire (LOQ); MIS Preference Form (developed by Miner); Gordon Personal Profile; the Richardson, Bellows, and Henry Test of Supervisory Judgment; and Background and Contemporary Data (BCD) Form.

Five criteria measures were obtained: unweighted peer ratings (managers rated their peers on 15 items related to the manager's job, including main areas of administrative, social, and technical function); weighted peer ratings (based on rating by peers, and rank position of the importance of the items); peer alternation rank (peers ranked each other); supervisor alternation rank (managers ranked their subordinates in the sample); and corrected salary (corrected for length of service).

DESIGN AND ANALYSIS

The managers were divided into groups A and B. The groups were analyzed separately and regression weights obtained. The regression weights for the two groups were cross validated. A second analysis was made by dividing the first-line managers into two groups and then running separate multiple regression analyses for the two groups.

Correlations and intercorrelations between variables and criteria were computed for the separate groups.

RESULTS AND DISCUSSION

1. Only five significant correlations between predictor variables and the measures of criteria were found in sample A, and only four from sample B. Only one correlation was found to be significant for both samples—Otis and corrected salary.
2. Multiple correlations for regression weights applied to the sample from which they were drawn, ranged from .36 to .61. When regression weights were applied to the other sample, the correlation ranged from –.02 to .25.
3. "The major implication of this study is that there are predictors which are significantly related to a measure of managerial success for first-line managers in widely scattered plants of a single organization."

COMMENTS

The author appears to be overstating the results of this study. Only isolated correlations were found between the variables and the criteria. Only one correlation held up across the two samples. The multiple correlations greatly decreased when applied to both samples and, in some cases, the relationship not only decreased, but changed direction. One significant finding is less than would be expected by chance alone.

177.

Today's Search for Tomorrow's Leaders

Walters, R. W. and Bray, D. W. (1963)

Is success in college related to success in business?

POPULATION AND SAMPLE

The sample included 17,000 college graduates from accredited institutions, who were employed by the Bell Telephone System at the time this study began. (Date not specified in the report of the study.) The sample was selected from a total population of approximately 30,000. The following groups were excluded from the sample: graduates after 1950, those hired more than five years after graduation, evening school graduates, and those on leaves of absence.

INSTRUMENTATION AND DATA

There were four indices of college success used in the study: (1) rank in college graduating class (secured from college records); (2) quality of the college (based primarily on personal evaluation by Walters, who has 30 years experience in the college employment section of A.T. & T., and two studies by Knapp and Goodrich, and Knapp and Greenbaum, dealing with accomplishments of graduates from various colleges); (3) campus achievements (extracurricular activities, etc.); and (4) other factors in college background.

The measure of business success used in this study was the annual salary earned by an individual, compared to that earned by others with the same length of service with the Bell System.

The School and College Ability Test (SCAT) was used as a possible predictor of business success.

DESIGN AND ANALYSIS

The four indices of college success were compared with annual salary. These four indices were also studied in relation to other measures, including SCAT, to determine if combinations of measures increase the predictability of success in business.

Results were reported as percentages.

RESULTS AND DISCUSSION

1. Academic record appeared to be the most significant factor in predicting success in business.
2. The next best predictor of business success was the quality of the college the individual attended.
3. Only substantial achievement in extracurricular activities was found to have any relationship with success in business.
4. Self-support while in college showed no relationship to the criteria.
5. The SCAT was found to separate the graduates of high quality schools from other schools, but it did not differentiate between graduates of the middle and lower quality schools.
6. Fifty-nine percent of the individuals ranked in the top one-fourth of their class were found in the top 50%, in terms of SCAT scores; 71% in the lowest one-fourth of their class ranking were found in the bottom 50%, in terms of the SCAT scores.

COMMENTS

Some of these results do not support the findings of other studies. Other studies have reported significant relationships between the amount of self-support in college and success in business.

The description of the sample was not explicit. The criteria of selection told something about what the sample was not like, but not too much about what it was like.

TESTING

178.

Predicting Job Performance and Tenure

Allen, L. T. (1967)

What is the relationship of test scores, biographical data, and college grades to job performance?

POPULATION AND SAMPLE

The population for this study included all trainees hired between January 1, 1960 and January 1, 1966 by the Federal Land Bank (FLB) and the Federal Intermediate Credit Bank (FICB). There were 56 FLB and 19 FICB trainees included in this study.

INSTRUMENTATION AND DATA

All the trainees had completed the General Ability Test (a timed reading test of vocabulary, analogy, statement interpretation, and reading comprehension) and the 16 Personality Factor Questionnaire. Application blanks were used as sources of biographical information.

FLB trainees were rated on job performance by five bank officials. The bank officers were asked to rank the top 10 and bottom 10 trainees. These five sets of rank-order ratings were combined, and the trainees were divided into high-rated and low-rated groups of 10 each.

FICB trainees were ranked by four bank officers and three area representatives. These seven rank-order scores were combined and a final rank-order was determined.

All college quartile rankings were obtained for the college graduates.

DESIGN AND ANALYSIS

"All comparisons were made on the basis of a *t* test, with a 0.10 level considered significant. Means were obtained on all tests, biographical data, and college quartile rankings. Rank-order correlations were used to determine the relationship between scores available and performance."

RESULTS AND DISCUSSION

1. The 10 top FLB trainees were significantly more humble, relaxed, and sober than the 10 low trainees.
2. Comparison of the eight high FICB trainees with the eight low trainees showed only one significant difference between the groups—the high group was more "tender-minded."

COMMENTS

The value of these results is questionable. A 0.10 level of significance with only 8 or 10 trainees in a group increases the possibility of chance results.

Even if the results were significant at an acceptable level, of what value is it to know that bankers rated high on performance are more "tender-minded" or "humble" than low performance bankers? The variables chosen for study are certainly not exhaustive and may be of only limited importance and relevance. No mention of tenure was made in the results although tenure is mentioned in the title.

179.

College Achievement and Progress in Management

American Telephone and Telegraph Company, Personnel Research Section (1962)

Is there a relationship between performance in college and success in the business world?

POPULATION AND SAMPLE

The sample consisted of 17,000 employees selected from approximately 30,000 college graduates employed by the Bell System at the time this study began. Those not included in the study were graduated after 1950, those hired more than five years after graduation, evening school graduates, and employees on leaves of absence.

INSTRUMENTATION AND DATA

The collected data included: class rank at graduation (verified by the registrar of the university attended); the quality of the university, as determined by published materials and personal interviews with college deans and placement directors; extracurricular activities in college; and the degree of self-support while in college.

DESIGN AND ANALYSIS

The employees were divided into three salary level groups (top, middle, and bottom third) based on their salary as compared with salaries of all Bell System employees in the sample who had about the same length of service.

Verified rankings at graduation were obtained for about 10,000 employees. They were then classified as to the third of the class in which they graduated. The top 10% were identified.

Colleges were ranked as "above average," "average," and "below average" in terms of quality.

Results were reported in terms of totals and percents. (No tests of significance were applied.)

RESULTS AND DISCUSSION

1. Fifty-one percent of those who graduated in the top 10% of their class and 45% of those who graduated in the top third of their class were in the top salary third. Also in the top salary third were 32% from the middle third of their graduating class and 26% from the bottom third.
2. Rank in graduating class and college quality were compared with the top salary third. Fifty-five percent of the top third of the class from "above average" colleges were in the top salary third, compared to 42% and 40% from "average" and "below average" colleges, respectively.
3. Extracurricular activities in college were compared with the percent of employees achieving the top salary third. The top third of the class from "above average" colleges who participated in "substantial" extracurricular activities showed 67% in the top salary third. Of those employees from the same group who participated in "some" and "no" extracurricular activities, only 61% and 47% were in the top salary third. This same trend was found through all groups.
4. Degree of self-support through college showed no differences between top, middle, and bottom salary thirds with 34%, 33%, and 33%, respectively, for those students who provided two-thirds of their own support. Similar results were found for all degrees of self-support in college.
5. Findings do support the conclusion that college achievement is a substantial predictor of progress in management in the Bell System.

COMMENTS

The method of reporting data is not as clear as it could be. The lack of tests of significance lessens the usefulness of the report. The data could have been analyzed using chi-square analysis.

To what extent could one expect to find similar results using samples from other employers?

180.

Biographical Data and the Identification of Creative Research Personnel

Buel, W. D. (1965)

Can creative research personnel be identified using biographical data?

POPULATION AND SAMPLE

The sample consisted of 132 male research personnel employed by a major pharmaceutical research and manufacturing company. The sample included research directors, assistant directors, supervisors, senior and junior investigators, research assistants, and technical support personnel. The education levels of the sample revealed the following profile: 4 Ph.D./M.D. combinations, 6 M.D., 64 Ph.D., 16 M.S., 3 D.V.M., 2 LL.B., 33 B.S., and 4 had college training, but no degree.

Areas of specialization were: chemistry, pharmacology, biochemistry, biology, endocrinology, bacteriology, physiology, veterinary medicine, zoology, and other areas such as math, law, and engineering.

The ages of the group ranged from 23 to 63 years, with a mean of 38.8 years. Experience with the organization ranged from 1 to 47 years, with a mean of 9.9 years. All research personnel were assured that the results of their test would have no bearing on their job status. From the total sample (N = 132), 80 were randomly selected to be used as an item-weighting sample. The other 52 subjects were used as a holdout group for cross validation.

INSTRUMENTATION AND DATA

Two criteria of creativity were used. Both were presented as personnel evaluations. The first criterion was a hypothetical statement that the individual had been selected as director of research for a new company. His instructions were to select from his associates those whom he thought would make the most significant, original, and lasting contributions to research. Each individual then divided his associates into five groups (approximately equal in size) according to how he perceived their creativity.

"The within-group rankings were then converted to a single rank criterion for all subjects ranked by a particular rater, and these continuous rankings converted to linear scale scores by the methods suggested by Hull and Garrett, thereby permitting the combination of distributions of varying size and the averaging of individual criterion scores from those distributions."

The second criterion of creativity used was the Supervisor's Evaluation of Research Personnel(SERP), a forced-choice supervisory evaluation of creativity.

A 118-item personal history form was administered to each individual. Fifty-nine of the items had been taken from work completed by Albright and Glennon in which the items had been validated against creativity and/or research performance criterion. The remaining items had been validated as being consistent with current theory on creative behavior.

DESIGN AND ANALYSIS

"Biographical items—creativity criterion correlations were reported as tetrachloric estimates of linear correlation coefficients." The .05 level of significance was accepted for this study. Item analysis was used to determine significant biographical items related to creativity (as a linearized-rank criterion). Fifty items were found to be valid at the .05 level. Forty-one of these items were combined into a no previous experience (NPE) factor or scoring key. The remaining nine items were combined as a previous experience (PE) scoring key (experience defined as at least one job prior to their present experience). The NPE and PE were used to score the 52 holdout questionnaires in an attempt to demonstrate concurrent validity. Age appeared to co-vary with both NPE and PE and with the criteria of creativity. Partial and multiple-partial correlations were calculated to remove the effects of age.

RESULTS AND DISCUSSION

1. Considering the validity of the two keys, the data suggest that significant concurrent validity does exist in relation to the linear criterion of creativity. NPE had a rank correlation of .38, which was significant at the .05 level. PE had a rank correlation of .46, which was significant at the .01 level.

2. Original criterion ranks were perhaps partially based on the rater's knowledge of the individuals' patents and publications. One patent and one publication were removed from the PE key to avoid spuriously high correlations. The remaining seven items of the PE key correlated .45 with the creativity criterion (significant at the .001 level), suggesting that the PE scale does predict creativity in an industrial research setting.

3. The data suggest significant relationships between SERP and PE, and SERP and the PE/NPE combination (R). The correlations of SERP with PE and R were .27 and .27, respectively. These were both significant at the .05 level. These correlations of PE and NPE with SERP as a criterion were considerably lower than the correlations of PE and NPE with the linearized-rank criterion of creativity (PE with linearized rank .46, NPE with linearized rank .38). This is not surprising since NPE and PE keys were analyzed against the linearized-rank criterion.

4. NPE correlates .50 and .49 (.001) with the number of patents and publications, respectively, while PE (one patent and one publication removed) correlates .34 and .51 (.05) with patents and publications, respectively.

5. A review of the items from the questionnaire which predicted the criterion showed an image of a creative biological or physiological scientist similar to previously reported images. The more creative men have a positive self-image, a need for personal independence, wide interests, a history of parental permissiveness in terms of decision-making, and a tendency to become over involved in terms of time available to perform job-related activities.

COMMENTS

The data suggest some value in using employees' linearized ranks of the creativity of associates for identifying creativity in an industrial research setting. The data also suggest that one of the best measures of creativity in an industrial research setting is the number of patents and publications. The high correlation between the number of patents and publications and peer rankings of potential for creative, original, or lasting research contributions suggests the possibility that these rankings, supposedly of creativity, may instead be rankings of past achievement. That is, the perception of peers concerning an associate's potential for future productivity may be largely determined by their knowledge of past productivity. If so, there is no need to use the term creativity when describing the criteria; productivity is a better descriptor.

181.

SVIB Managerial Orientation Scores of Outstanding Men

Campbell, D. P. (1969)

Is the Strong Vocational Interest Blank Managerial

Orientation scale a generalized measure which can be used to predict success in settings other than managerial?

POPULATION AND SAMPLE

The sample included 893 men in various occupations who could be considered outstanding in their fields. The individuals were selected in 23 samples and included: governors, Nobel Prize winners, corporation presidents, artists, famous football coaches, admirals, generals, American Psychological Association presidents, and others. (No explanation of the time of sampling or of the sampling techniques was included in the report of the study.)

INSTRUMENTATION AND DATA

All of the individuals were administered the Managerial Orientation (MO) scale of the Strong Vocational Interest Blank (SVIB).

DESIGN AND ANALYSIS

The mean scores and standard deviations on the MO scale were computed for the various occupational groups. The mean scores were arranged in rank order, with scores ranging from 52 to 27. No tests of significance were applied.

RESULTS AND DISCUSSION

The results showed that individuals concerned with the management of large groups of people (corporation presidents, football coaches, generals, admirals, and governors) scored higher than those individuals outstanding as scholars, Nobel Prize winners, authors, Medal of Science winners, etc.

COMMENTS

The results indicate that the MO scale does differentiate between extremes in management and non-management personnel. The study might have been strengthened if it had included some individuals from areas between the two extremes to see if the scale could differentiate at various management levels.

The lack of statistical tests of significance makes it difficult to judge the reliability of the differences between groups observed in this study.

182.

Interaction of Traits and Motivational Factors in the Determination of the Success of Managers

Ghiselli, E. E. (1968)

What is the nature of the interaction of traits and motivational factors in determining manager success?

POPULATION AND SAMPLE

Included in the sample were 271 middle-level managers in a variety of different types of business and industrial organizations. A rating of job success was determined for each manager. These ratings were dichotomous; i.e., the manager was either more successful or less successful. Fifty-five percent of the managers were classified as more successful and 45% as less successful. (No explanation of how the ratings of job success were obtained was included in the report of the study.)

INSTRUMENTATION AND DATA

"A forced-choice inventory was used which not only provided indexes of the traits of intelligence, supervisory ability, and self-assurance, but also of the motivational factors, the desire for job security, for high financial reward, for power over others, and for self-actualization."

DESIGN AND ANALYSIS

The managers were divided into an upper and lower half for each of the motivational factors, according to their score on each factor. "Then separately for each of these two subgroups, those in whom each given motivation was strong and those in whom it was weak, the coefficient of correlation between scores on each of the three trait measures and job success was determined."

RESULTS AND DISCUSSION

1. "The desire for job security clearly has moderating effects on the relationship between success and traits of supervisory ability and self-assurance. For those managers who are strongly motivated toward job security, the relationship between supervisory ability and success is lower than for those in whom that motivation is weak."
2. "The desire for financial reward moderates the relationship between self-assurance and success, there being no relationship at all between self-assurance and success for those who are strongly motivated for such reward, and a fairly substantial relationship for those in whom such motivation is weak."
3. "Finally, the desire for self-actualization moderates the relationship between managerial success on the one hand, and both supervisory ability and self-assurance on the other, the relationships being higher for those for whom the desires are strong."
4. "The differences between pairs of coefficients of correlation are somewhat larger for job security than for the other three factors, so possibly job security is the motivational factor most likely to produce interaction between traits and success."

COMMENTS

The description of the procedures used in obtaining success ratings was incomplete and makes it difficult to know how valid such ratings really are. The validity of such ratings is basic to the interpretation of the findings. The examination of motivational variables as possible moderator variables in the relationships between personality characteristics and success on the job is a promising technique.

183.

Contributions of Projective Techniques to Assessment of Management Potential

Grant, D. L., Katkovsky, W., and Bray, D. W. (1967)

What contributions do projective techniques make to assessment-center staff evaluations of the progress of young men in management within the American Telephone and Telegraph Company?

POPULATION AND SAMPLE

The sample consisted of 355 male participants in the Bell System Management Progress Study. The participants were divided into two groups, based on level of education prior to employment with the Bell System. The first group had graduated from college (N=207). The second group had not attended college but had been promoted to management positions early in their careers (N=148).

INSTRUMENTATION AND DATA

Three projective techniques were used in the assessment centers of the Management Progress Study. They were: the Rotter Incomplete Sentence Blank (RISB), the Management Incomplete Sentences Blank (MIST), and six cards (2, 6BM, 7BM, 8BM, 14, and 16) from the Thematic Apperception Test (TAT).

The MIST was a 57-item instrument designed specifically for the Management Progress Study. The sentence stems utilized in this instrument were designed to measure management-relevant attitudes toward such variables as achievement orientation; level of aspiration; job involvement; job assignments of various types; and reactions to superiors, peers, and subordinates.

The projective tests were administered to small groups of employees soon after they were acquainted with the purposes of the program. They were assured their test results would remain confidential.

The results of the tests were evaluated and a brief report about each employee was completed by a clinical psychologist. All 355 individual evaluations and reports were completed by one of two clinical psychologists. The reports contained hypotheses about the individual and how his characteristics would influence his management career.

The reports, along with other assessment technique results, were read to the nine members of the assessment staff. The staff then rated the variables. Nine of the most frequently named variables were: achievement motivation, self-confidence, career orientation, dependence, affiliation (to groups and people), optimism-pessimism, willingness to assume leadership role, willingness to accept subordinate role, and general adjustment. Each of the employees was coded on the nine variables using a 5-point scale (1 was a low score, 5 was high).

DESIGN AND ANALYSIS

Reliability of the coding procedure was determined by correlating the ratings of the two psychologists on each variable for each of the two groups of employees. The Spearman-Brown prophecy formula was used.

The ratings of the psychologists were pooled, and the resulting sum scores of the projective variables intercorrelated and correlated with judgments of the assessment staff (scores from other assessment techniques) and with progress in management as evidenced by salary increase.

RESULTS AND DISCUSSION

1. Reliability of the coding procedure ranged from .85 to .94, with a median of .91.

2. Scores on the nine most often named variables did not discriminate between college graduates and non-graduates.

3. Several meaningful clusters of high correlations were identified. An adjustment cluster was identified containing high correlations between optimism-pessimism, general adjustment, and self-confidence. A leadership cluster included leadership role, dependence, and subordinate role.

4. Correlations between projective report variables and variables reflecting assessment staff evaluations showed leadership motivation was more highly related to staff judgments than adjustment items. It appeared that projective reports had a marked influence on the assessment staff's judgments.

5. Projective variables did not correlate significantly with personality measures.

6. Several projective variables correlated significantly with salary increase: leadership role, dependence, subordinate role, and achievement motivation (.05).

COMMENTS

A major problem with this study results from the fact that the assessment staff had studied the reports of the clinical psychologists concerning the projective techniques used. Other measures of success or potential involving judgments by the assessment staff may be contaminated by their prior knowledge of the participants' scores on the projective techniques. It is likely that the assessment staff would expect leadership variables to be more related to success in a leadership role than adjustment variables, hence, finding number 4. But the meaning of this finding is not clear, since the assessment staff's judgments are affected by both their knowledge of the projective test results and their expectations about the relationship of leadership variables and success in leadership roles.

Since the scores from the projective techniques involving personality variables failed to correlate with other measures of personality variables, it casts doubt on the validity of one or the other, or both, of the personality measures. If they are not valid measures, then the interpretation of any relationships involving these measures is impossible. Thus, caution is advised in interpreting any relationships between the four variables measured by the projective techniques and leadership success measured by salary increases.

184.

Biographical Correlates of Management Success

Heckman, R. W., Banas, P. A., Lazenby, R. E., and Moore, L. M. (1969)

What is the relationship between selected biographical variables and the success of managers in different functions?

POPULATION AND SAMPLE

The population included college graduates working for a large midwestern manufacturing company. The sample was selected at random and stratified according to function, management level, and tenure. The six functions included: industrial relations (N=133), manufacturing (N=254), sales (N=207), purchasing and traffic (N=110), finance (N=186), and engineering (N=221). Only those graduates hired prior to age 31 and hired by the company between 1940 and 1964 were included in this study.

A questionnaire was mailed to each eligible employee. There were 1,329 (82%) of the questionnaires returned. Those employees returning the questionnaire were compared with the non-respondents in terms of age, monthly salary, and company experience. No significant differences were found. Twenty-six percent of the graduates held master's degrees, and one percent held Ph.Ds. Those graduates with an advanced degree were excluded from this study. The total number of employees included in the sample was 1,111.

INSTRUMENTATION AND DATA

The Biographical Inventory Questionnaire (BIQ) was mailed to all members of the sample group who met the criteria of age and time of employment. The questionnaire was composed of 161 biographical items designed to relate to management success. These items covered such areas as: academic achievement, participation in extracurricular activities, socioeconomic background, and early work experiences. Most of the responses were made on a continuum (very little, some, quite a bit, etc.).

Additional information was obtained from the personnel records: tenure, age, education, performance appraisal rating, and the employee's undergraduate institution.

DESIGN AND ANALYSIS

"Monthly salary (corrected for tenure by regression analysis) was the criterion for this study." BIQ items and biographical data were correlated with the criterion for the total and for each of the six function groups separately. The percentage of high criterion employees selecting each alternative was compared with that of the low criterion employees for the non-continuous items. They were placed in one of nine cells created by trichotomizing the distributions of college quality and grade-point average. Percentages of employees in each cell who were among the top one-third on the criterion were computed. Two-factor analyses were performed using the principal components method with varimax rotation. The first factor analysis was of pre-college and college background items. The second factor analysis contained items of early work experiece.

RESULTS AND DISCUSSION

1. For the total group, over 40% of the items showed significant correlation with the criterion (.01 level). The best predictors included: quality of the undergraduate institution (.33), grades in high school (.30), grades in college (.33), scholastic awards in high school (.25), and the number of honor societies in college (.27).

2. Salary increases correlated .21, .18, and .20, respectively, with number of student offices held in college, number of leadership positions held, and ability as an organizer. (No statement of significance or non-significance was supplied in the report of the study.)

3. The major differences in the relationship of the predictors to the criterion across the different function groups were: college grades (for finance group .41, engineering .37, and manufacturing and sales .16), and leadership positions held and belonging to honor societies in college (engineering and sales .24 and .37 compared to very low correlations for industrial relations, purchasing, and traffic).

4. Sixty-four percent of the employees from above-average colleges and in the top one-third of the grade distribution were in the high-salary progress group, compared to 23% from below-average schools and in the bottom one-third of the grade distribution.

5. Six factors emerged as a result of the factor analysis of college and pre-college criterion relevant items: leadership ability, socioeconomic background, scholastic achievement, father's influence, academic habits, and financial independence.

COMMENTS

The data suggest that success as a manager in some function areas may be more easily predicted and defined than in other areas. In this study, engineering and finance are more closely related to the variables used for prediction than the other function areas. The magnitude of the correlations reported (.41 is the largest) suggests that most of the variance in success as managers is not accounted for by the biographical variables used.

185.

The Prediction of Scientific and Engineering Performance with Biographical Information in North American Rockwell

Institute for Behavioral Research in Creativity (1968)

What is the relationship between selected biographical data and performance as a scientist or engineer?

POPULATION AND SAMPLE

A random sample of 383 scientists and engineers who listed applied research as their function were selected from a total population of approximately twice that size. All were employed by five Los Angeles divisions of North American Rockwell (NAR). The sample included only non-supervisory or supervisory positions of salary grade 14 or below. The sample size was reduced to 294 because of incomplete data.

INSTRUMENTATION AND DATA

"The Biographical Inventory (BI) developed for North American Rockwell (Form N) contains 200 multiple-choice items, and is essentially a product of the latest research findings in the area of selection of high level scientific and engineering talent." The BI deals with four areas: developmental history, parents and family life, academic background, and adult life and interests.

Multiple criterion measures of performance success were used. In all, there were 14 performance criteria obtained from: supervisor ratings (over-all work performance, quantity of work, skill with people, creativity, subject matter knowledge, ascendancy in communicating ideas, quantity of ideas, quality of ideas, and total creativity); company records (salary per month, salary corrected for experience within divisions, and salary corrected for experience across divisions); and BI (number of publications and number of patents).

Certain control variables were used in establishing performance criteria: education, experience at NAR, total experience in field, and likeability.

DESIGN AND ANALYSIS

A random split was used to divide the sample into two subsamples for cross validation purposes. An item analysis was used for each subsample to establish scoring weights for each item which differentiated between various levels of performance on each of the criterion measures.

The study design utilized two more item analyses. "An initial item analysis was completed in order to develop composite criterion measures which were combinations of existing criteria." Multiple-regression analysis was used in constructing the composite measures.

"The second item analysis carried out in a double cross validation design, with 147 individuals in each sub-sample. The criterion measures selected for this item analysis included: five ratings by supervisors, three measures derived from BI items, five measures from the creativity checklist, five measures originating from company records, and four multiple regression composites, for a total of 22 dependent variables."

"The relative importance of the performance measures as seen by North American Rockwell was ascertained by comparing the relationships of these measures to the salary performance criterion."

Criterion variable means, standard deviations, and intercorrelations were computed for each subsample.

RESULTS AND DISCUSSION

1. "The rank order of the relevant performance measures, in terms of their similarity to the salary performance measure, was: number of publications, subject matter knowledge, creativity, over-all work performance, quality of ideas, number of patents, quantity of ideas, quality of work and skill with people."

2. Intercorrelations between control scores and criteria showed little effect by the variables of education, experience, and supervisor rating of likeability. Exceptions include: relationship between experience and publications, patents and uncorrected salary; relationship between education and publications, patents, subject matter knowledge, and corrected salary.

3. With few exceptions, cross validities of BI items in predicting criterion were moderately high (.30 to .50) and positive.

(The results reported in the study were numerous and specific. It is suggested that direct reference be made to the report of thes of the study.) By way of summary, "The results were significant, and indicate that the Biographical Inventory could make an important contribution to the selection and placement of future employees at North American Rockwell."

COMMENTS

The results of this study may be useful to other organizations for predicting success of their employees. It should be remembered that both the instrument and the sample reflect an organizational bias.

Many of the criterion measures shared common parts which would account for high intercorrelations; for example, creativity, quantity of ideas, and quality of ideas are all connected.

The cross validities of prediction for the BI items were moderate (mostly in the 30s and 40s) which still leaves a lot of variance unaccounted for.

186.

Ability as a Moderator of the Relationship Between Job Attitudes and Job Performance

Lawler, E. E., III (1966)

Do ability measures operate as a moderator of the relationship between contingency attitudes and performance?

POPULATION AND SAMPLE

The sample consisted of 211 lower and middle level managers of three divisions of various state governments. From a total of 258 questionnaires mailed out, 237 were returned (91.9%). Only 211 were usable in the study.

INSTRUMENTATION AND DATA

The instrument used in this study was a three-part questionnaire. Part 1 required the manager to rate nine factors according to their importance in determining pay rate. The rating used a 7-point scale; 1 (unimportant) through 7 (important). Three of the factors measured perceived importance of job performance as a determiner of pay rate.

Part 2 required the manager to rate each of the same factors, this time comparing himself to the other managers in his division who had about the same types of duties. Self-ratings were made on a 7-point scale; 1 (low) through 7 (high).

Part 3 of the instrument requested the manager's salary level, age, management level, seniority, and education level.

A ranking form was sent to the superior of each of the managers. The superiors were asked to rank a group of three or more of their subordinates, using two criteria—how well they were qualified for their job and how well they were performing on the job.

DESIGN AND ANALYSIS

Intercorrelations were computed between the three factors measuring the perceived importance of job performance (quality, productivity, and amount of effort). Intercorrelations of .66 to .80 were found. The three factors were combined, and the managers were divided into high and low contingency groups based on the sum of scores for the three factors. They were also divided into high and low ability groups, based on supervisor ratings.

Analysis of the data involved testing for significance of the differences between mean scores for supervisor and self-ratings of job performance, for high and low ability groups across two levels of contingency.

Coefficients of correlation were computed between performance ratings (supervisor and self) and ability measures.

Analysis of variance was computed for both the supervisor's ranking and the self-ranking using a 2 x 2 factorial design with unequal cell frequencies.

RESULTS AND DISCUSSION

"Strictly speaking, the present sample is not a random sample of managers, in general; and therefore, our conclusions must be restricted to the organizations studied."

1. No significant differences were found between means for the two job performance scores of the high and low contingency groups of low ability.

2. High ability, high contingency managers scored significantly higher than high ability, low contingency managers in terms of both supervisor and self-rating of job performance.

3. Significant effects were found for both ability and contingency on supervisor's rankings (.05). An interaction effect between ability and contingency approached significance at the .06 level.

4. Only contingency showed a significant effect on self-ranking of job performance. A significant interaction effect was found between ability and contingency (.05).

5. "The results of the present study clearly support the point that an ability measure can serve as an effective moderator of the relationship between contingency attitudes and job performance."

COMMENTS

The nature of the sample may be the biggest limiting factor to the applicability of these results. Civil service is not representative of situations in the business world, in general; thus, these results may be peculiar to government work.

The meaning of the observation that contingency attitude (which is not defined) is related to job performance in high ability managers, but not in low ability managers, is not immediately clear. Such an observation suggests selecting potential managers of high ability. This is certainly consonant with reason. An alternate interpretation—that attitude is not important in low ability managers when considering job performance—is not as sensible. Perhaps a certain amount of ability is necessary before attitude can make a difference.

187.

Some Correlates of Creativity in Engineering Personnel

McDermind, C. D. (1965)

What are the correlations between a variety of personality and performance instruments, and the creativity of engineers in an applied industrial setting, as rated by peers and supervisors?

POPULATION AND SAMPLE

Included in the study were engineers and technical personnel employed at the engineering division of the Hammond Organ Company. From a total of 75 engineers and technical personnel, 58 volunteered to participate in the study.

"The engineers who participated in this study did not differ significantly, in terms of education, length of service, supervisory responsibilities, or compensation, from those who chose not to participate."

A comparison of the mean ages of the two groups revealed a significant difference (.05). The nonparticipants were significantly older than the participants, with a mean age of 43.7 years, compared to 37.9 years.

INSTRUMENTATION AND DATA

Seven instruments were used as possible predictors of creativity: California Psychological Inventory (CPI), Holland's Vocational Preference Inventory (VPI), Welsh Figure Preference Test (FPT), Chapin's Social Insight Test (SIT), Gough's Adjective Check List (ACL), Terman's Concept Mastery Test (CMT), and Biographical Information for Research and Scientific Talent (BIRST) Forms P and S.

Two additional instruments were used to rate the participants' creativity. Each was rated by his immediate supervisor (using the Supervisor's Evaluation of Research Personnel) and by an associate considered most familiar with his work (using the Check List Rating Scale—Form C-1)

Each participant who achieved a rating above the 50th percentile on both measures was given a score of three (N = 20). Each with a score below the 50th percentile on both measures was given a score of one (N = 16). Those who received one score above the 50th percentile or one below were given a score of two (N = 22). This is referred to as tripartite grouping.

DESIGN AND ANALYSIS

The participants completed the instruments at their own convenience, then mailed them directly to the investigator (they were assured that no report of their test results would be given to the management).

After the prediction instruments were returned, the creativity rating forms were distributed. At no time were specific purposes of the study discussed with the individuals.

Correlations were made between the three criteria of creativity (the two rating scales and the tripartite grouping based on these rating scales) and the 65 predictor variables.

RESULTS AND DISCUSSION

1. Out of 195, approximately 10 significant (.05) correlations could be expected, by chance alone. The results showed 15 significant correlations at the .05 level, and seven at the .01 level. "The predictors, as a group, may be considered significantly related to the ratings of creativity, but at a low level of confidence."

2. There were 4 tests (CPI, VPI, FPT, SIT), representing 36 scores, which appeared to have no relationship to the 3 criteria.

3. The ACL showed very little correlation to the criteria of creativity when scored using the key developed by Gough. There were several scales of the

ACL which showed significant relationships when scored using the key developed by Heilbrun. The significant relationships between ACL scores and the criteria were primarily with the tripartite groupings. The ACL scales which correlated significantly with the tripartite groupings were: deference –.37 (.01), autonomy .37 (.01), dominance .27 (.05), abasement –.30 (.05), and aggression .29 (.05).

4. All three CMT scores correlated significantly at the .05 level with peer ratings.

5. The BIRST—Form S correlated with the criteria to the greatest degree. Significant correlations at the .01 level were found between the performance rating score of the BIRST, and both the supervisor ratings and the tripartite groupings. Significant correlations at the .01 level were found between creativity rating score in the BIRST, and the peer ratings and the tripartite grouping. The patent disclosure score of the BIRST was significantly related (.05) to only one creativity criterion (peer ratings).

6. Peer rating scores were significantly related (.05) to age and compensation; indicating that older, higher-paid engineers were rated more creative than their younger, lesser-paid counterparts.

7. Intercorrelations among criteria indicated a significant relationship (.01) between tripartite grouping and each of the other two criteria. The correlation between supervisor rating and peer rating was significant at the .05 level. This suggests only minimal agreement between supervisors and peers on what is creativity.

COMMENTS

Biographical data seem to be the best predictors of creativity. This finding is consistent with the idea that the best predictor of future performance is past performance.

In addition, the scores on the ACL suggest that the coworker, rated by his peers as creative, tends to describe himself as independent, dominating, and aggressive, and not self-abasing or deferent. He also scored higher on a concept mastery test.

These findings are consistent with other studies. The lack of control in the testing situation and the indirect nature of the criteria suggest caution in interpreting this study by itself.

188.

The Use of Personnel Tests and Biographical Data in the Selection of Recent College Graduates

Midwest College Placement Association (1964-1965)

To what extent are personnel tests and biographical data used in selecting and hiring college graduates?

POPULATION AND SAMPLE

The sample included 109 major companies selected from a list published in the July and August 1963 issues of *Fortune* magazine. Questionnaires were sent to the companies. From the 72 (66%) that were returned, eight questionnaires were discarded because of incomplete information. The companies represented the fields of manufacturing, insurance, and merchandising. Fifty-four of the 72 responding companies were ranked in the top quintile of the *Fortune* listings.

INSTRUMENTATION AND DATA

The individuals who were contacted and asked to respond for the companies were selected from two sources. Company-employed psychologists were selected from the *1963 Directory of the American Psychological Association* (APA). Sixty-one percent of the 64 questionnaires used in the study were completed by APA psychologists.

Where APA listings were not available, the questionnaire was sent to the person directly in charge of college recruiting. These names were obtained from the *American College Placement Directory*. (No explanation or description of the *Fortune* Magazine list of companies was provided in the report of the study. The procedures used in the selection of the 109 companies were also not explained.)

DESIGN AND ANALYSIS

The questionnaire was designed to investigate four areas: number of recent college graduates hired, the percentage of the graduates recruited directly from college campuses, the extent to which personnel tests and weighted biographical data are used in the selection of these graduates, and the value of these selection aids in improving the quality of the graduates hired.

RESULTS AND DISCUSSION

1. "The mean number of recent college graduates hired annually by the responding companies was 289." Fifty percent hired more than 125 graduates annually.

2. The percent of college graduates employed was a product of the type of business in which the company was engaged. The average number of new college graduates hired per 1,000 employees ranged from 12.8 for chemical industries to 2.4 for automotive suppliers.

3. Approximately 50% of the responding companies stated that about three-fourths of the recruiting is done on the college campus. The companies hiring the greatest number of college graduates (500 or more annually) depend less upon campus recruiting than do those companies which hire fewer college graduates.

4. Fifty-nine percent (38) of the 64 companies reported using tests of various types to select college graduates. The type of test varied with the position being filled. Sales, finance, and engineering were the three positions for which tests were most frequently used.

5. Only 16% reported current use of biographical data in the selection of college graduates.

6. The factors reported by those companies that had conducted successful studies in job predictor success were: high scholastic achievement (GPA or class rank), previous leadership experience, extensive extracurricular activities, and work experience while in college.

COMMENTS

More information is needed about the selection of sample companies. The results may serve as a benchmark to allow future assessment of changes in recruiting procedures, patterns, and success.

189.

The Prediction of Managerial and Research Success

Miner, J. (1965)

What is the significance of motivational factors in the prediction of success for managerial and research personnel?

POPULATION AND SAMPLE

The sample included 68 managers and researchers in a research and development (R & D) department of a large corporation. All levels of management and researchers, from first line up to, but not including, the vice president in charge, participated. All of this group had been tested approximately five years earlier.

Also included in the study were 81 individuals from the marketing department who had been involved in the same testing program five years earlier and who had continuous company service during the interim period.

A third group used in the study consisted of 69 men from R & D and marketing groups who had terminated service with the company, subsequent to their being tested five years previously.

INSTRUMENTATION AND DATA

"In order to measure. . .motivational characteristics, a special sentence completion test was constructed. This test, which will be referred to as the MSCS (Miner Sentence Completion Scale), contains 40 items, and takes approximately a half-hour to administer. It covers all aspects of human motivation considered to be of importance in meeting. . .generalized managerial role requirements. Thus, it deals with the essential elements of the role-motivation theory, and accordingly, those obtaining high scores on the test would be expected to perform at equally high levels on various indexes of managerial success."

Other data used included: level of position; over-all job performance, as rated on a nine-point scale; and potential for advancement to higher levels of responsibility, as measured on a five-point scale. One phase of the study also used as a criterion whether the immediate supervisor would rehire.

DESIGN AND ANALYSIS

The MSCS was administered to the personnel of both departments. The results of the R & D employees were compared to their level of position, overall performance rating, and potential for advancement rating.

Five years later, those of the R & D department who were still with the company were divided into two groups—researchers (19) and managers (49). The MSCS scores were then compared in both groups, according to how many levels they had been promoted or demoted in the last five years.

The MSCS results for the marketing department employees who were still with the company were also compared to a promotion-demotion index.

A final phase of the study correlated the MSCS results of those who had terminated from the company, to their immediate supervisors' evaluations of whether or not they would rehire them.

A biserial correlation analysis was used.

RESULTS AND DISCUSSION

1. In the original phase of the study of the R & D personnel, MSCS scores correlated .40 with position level. This was significant at the .01 level. The correlation of MSCS with advancement potential was .43 (significant at the .01 level), and the results of the comparison to over-all job performance was .24 (.05).
2. In the follow-up study five years later, it was found that MSCS scores correlated .25 with the promotion-demotion index. This was not considered a significant relationship (.05 level).
3. The correlation of MSCS results to the promotion-demotion index of researchers was –.45 (significant at the .05 level).

"Those with the motivation to meet managerial role requirements had done less well as researchers. Those who clearly disliked managing had been more successful in research work."

The MSCS results of the marketing group correlated .39 to the promotion-demotion index (significant at the .01 level).

COMMENTS

Finally, the MSCS scores of terminated employees had an extremely high relationship (r = .69) to supervisors' evaluations of whether or not they would rehire them (significant at the .01 level).

Perhaps this study should be conceived as a validation study for the MSCS. The question of whether the MSCS is useful as a predictor of promotion-demotion (or as a concurrent correlate of advancement potential) should be answered, "no" or with a weak, "maybe," when considering the sample of the 68 R & D employees. A stronger, but not overpowering, "maybe" would be the answer when considering the researchers only.

The strongest relationship was between the MSCS scores of terminated employees, and whether they would be rehired (r = .69). Perhaps the scale measures second thoughts about terminating employees, rather than other factors. Evidence of the validity of the MSCS as a predictor of managerial or research success is weak. Whether it would add to the amount of variance which can be revealed using other better established predictors cannot be answered by these data. This may be the more important question to pursue.

190.

An Empirical Approach to Criterion Specifications in General Business

Pallett, J. E. and Hoyt, D. P. (1967)

What specific behavioral characteristics are related to success in general business activities?

POPULATION AND SAMPLE

Random samples of 250 liberal arts and 250 business administration majors were taken from the lists of male, college seniors registered with the University of Iowa Business and Industrial Placement Office, between the years 1954 and 1959. Each of the 500 graduates were contacted by post-card. Eighty-three percent (415) of the graduates returned the postcard.

Some were excluded from the sample for the following reasons: employed in a specialized job, earned an advanced degree, employed in a non-profit setting (government, education, etc.), self-employed or employed in family business. The reduced sample consisted of 256 graduates (103 liberal arts and 153 business administration graduates). The immediate supervisors of these 256 graduates were contacted and asked to rate each on certain qualities discussed, next, under the Instrumentation and Data section. "Returns were received for 92 of the liberal arts graduates (89%) and for 138 of the business administration graduates (90%). These 230 graduates constituted the basic sample."

INSTRUMENTATION AND DATA

The supervisors were asked to rate each of the graduates with whom they were familiar, in terms of their advancement-to-date and potential for advancement. The 2 ratings were done separately, using a 7-point scale ranging from lowest 2% to highest 2%.

A series of 23 rating scales was devised to measure more specific characteristics commonly encountered in industry. These characteristics included: adaptability, creativity, ability to deal with abstracts, problem-solving ability, judgment, foresight, decisiveness, accuracy, identification with the business world, identification with the company, dependability, self-improvement, interpersonal relations, sensitivity to others, likeableness, poise, administrative ability, written and oral communication, leadership, enthusiasm, persuasiveness, and competitiveness. The graduates were provided with a favorable (scored 2), a neutral (scored 1), and an unfavorable (scored 0) statement descriptive of a behavior illustrative of each of the 23 characteristics. The three statements were arranged in random order.

DESIGN AND ANALYSIS

The multiple-regression model was selected for treatment of the data. "The procedure required selecting a few of the specific scales as independent variables, and treating all remaining scales as dependent variables. Then a matrix was prepared of the partial intercorrelations among the dependent variables held constant. The goal was to find a set of independent variables which accounted for the variances and covariances of all remaining dependent variables."

The next step was to determine which of the independent variables contributed to the prediction of the success criterion.

RESULTS AND DISCUSSION

1. Five scale clusters were identified (persuasiveness, foresight, dependability, identification with the business world, and likeableness) from the intercorrelation matrix. These scales along with three others (oral communication, written communication, and identification with the company), selected because of their lack of correlation with other scales, were used as the independent variables.

2. "Partial correlations among the remaining scales were computed with the independent variables held constant. While the median partial r was only .065, 27% of the 105 partials exceeded ±15. The hypothesis of independence of the partial r's was rejected."

3. Three additional scales were added to the list of independent variables (problem-solving ability, leadership, and sensitivity to others).

4. Partial correlations still exceeded ±15, and again the independence of partial r's was rejected.

5. Creativity and enthusiasm were added as independent variables, but the same results occurred.

6. After an examination of the entire matrix, it was concluded that progress and potential ratings were too closely related to be treated as separate criteria.

7. It was concluded that the 13 scales listed as independent variables represented the best measure of job performance in general business available from this study.

COMMENTS

The probable lack of interrater reliability of roughly 230 supervisors' ratings of 230 employees, on a rather crude 7-point scale, may have been the real downfall of the study's design. That is, an unreliable criterion makes it impossible to find substantial correlations involving predictor variables and the criterion. The problem is further accentuated by the likelihood that the predictor variables were relatively unreliable as well.

191.

Predicting Success in Business

Williams, F. J. and Harrell, T. J. (1964)

What factors may be used as predictors of future business success?

POPULATION AND SAMPLE

"The population studied consisted of a group of 196 male, M.B.A. graduates of the Graduate School of Business, Stanford University, classes of 1927 through 1943, who lived in the six San Francisco Bay Area Counties of Maria, San Francisco, San Mateo, Santa Clara, Centra Costa, and Alameda. This represents a relatively homogeneous geographical region in which there is uniformity of living costs and intra-industry salary rates. Graduates employed in such non-business activities as education, social and governmental services, and the like were not included in the population."

An employee subgroup was formed, excluding all members of the population who were either owners, or related to owners, of the businesses (N = 116).

INSTRUMENTATION AND DATA

The data were collected from the college records of each member of the population. There were 15 items chosen to be used as possible predictors of success in business. They were: 4-year college grade point average (GPA); GPA for required courses in the Graduate School of Business; GPA for elective courses in the Graduate School of Business; scores on seven scales (engineer, production manager, personnel director, office worker, sales manager, lawyer, and masculinity-femininity) of the Strong Vocational Interest Blank for Men (SVIB-M); score on the

Thorndike Intelligence Examination or the Ohio State University Psychological Test; score on Faculty Rating Blank; and scores on three types of extracurricular activities in college (athletics, non-athletics, and leadership). One point was assigned for each extracurricular activity or position.

DESIGN AND ANALYSIS

The 15 items previously listed were the independent variables. The dependent variable for the whole group was success in business, as measured by salary level corrected for length of time since graduation. The distribution of corrected salaries very closely resembled the normal curve, with only slight skewness toward the larger salaries. Salaries were assigned a score from 1 to 12, depending on their position in the distribution. The median and mode were 6, and the mean score was 6.6.

For the employee subgroup, the success criterion (administrative level) consisted of three subcriteria: salary level, level of authority in relation to president, and amount of participation in decision and policy making. These scores were then located on a 10-point scale. The mean of the distribution of subcriteria scores was 5.6.

Separate correlation coefficients were computed to determine the relationship between the 15 independent variables, and the success criteria for the whole group and the employee subgroup.

RESULTS AND DISCUSSION

1. Significant correlations at the .01 level were found between GPA—elective courses, and leadership and salary level for the whole group. Professors' ratings of the individuals and scores on the masculinity-femininity scale of the SVIB-M were significantly correlated with salary at the .05 level.
2. A significant correlation (.05) was found between the administrative level criterion of the subgroup, and personnel director scale of the SVIB-M.
3. The correlation between GPA—electives and salary may be an indication of a possible predictor of success.

COMMENTS

The use of GPA—electives as a predictor of success in business may be enhanced by investigating the number and nature of the electives taken, as well. The major finding of this study is the relative paucity of possible predictors among those variables studied. In order for such a finding to have meaning, the set of possible predictors studied should have been selected on the basis of theoretical considerations.

192.

Prediction of Sales Success From Factorially Determined Dimensions of Personal Background Data

Williams, G. B. and Baehr, M. E. (1968)

Can personal background be used in predicting professional success in sales?

POPULATION AND SAMPLE

The sample was composed of a 210-man sales force and 16 district sales managers of a specialty-food manufacturing chain. The average level of education for the individuals was one to two years of college.

INSTRUMENTATION AND DATA

The instrument used was the Personal History Index constructed by Baehr and Williams. This instrument consisted of a multiple-choice questionnaire designed to obtain the personal history of the individuals.

This study was a sequel to a study by Baehr and Williams (1967) designed to identify and define some of the underlying dimensions of personal background data. Fifteen interpretable, oblique, first-order factors were discovered in the first study. They were: Factor 1 (school achievement) academic achievement and adjustment to school environment in high school; Factor 2 (higher educational achievement) special or technical qualifications and accomplishments resulting in a relatively late vocational start; Factor 3 (drive); Factor 4 (leadership and group participation) desire to influence and establish contact with others; Factor 5 (financial responsibility) ability to manage personal economy; Factor 6 (early family responsibility) early marriage, strong feeling of family responsibility; Factor 7 (parental family adjustment) realistic, constructive attitudes and relationship in early family environment; Factor 8 (stability) security and stability in work; Factor 9 (school activities) curricular and extracurricular activities; Factor 10 (professional success of parents); Factor 11 (educational-vocational consistency) similarity between interests and occupational preference; Factor 12 (vocational decisiveness) decisiveness in selecting an occupation and achieving the necessary training; Factor 13 (vocational satisfaction) satisfaction with occupation and anticipation of future peak performances; Factor 14 (selling experience) types of experience; and Factor 15 (general health) history of personal health.

A second factoring yielded five second-order factors. The factors were measures of on-the-job performance: (a) paired-comparison performance rating, (b) mean sales volume rank, (c) maximum sales volume rank, (d) route difficulty, and (e) tenure as a salesman.

DESIGN AND ANALYSIS

A *t* test analysis was made of the differences between the mean factor scores for the manager group and the sales group. A similar analysis was made on the differences between mean scores of the salesmen above 55 and those below 45 on a standard-score scale for the paired-comparison assessments.

Five criterion measures were found by a second factoring of the 15 first-order factors of the Personal History Index. A multiple regression analysis was calculated separately for each of these five criterion measures.

RESULTS AND DISCUSSION

1. Three factors (financial responsibility, early family responsibility, and stability) significantly differentiate between both salesmen and managers and high and low rated salesmen.
2. Three major criteria measures of success were: paired-comparison performance rating, mean sales volume rank, and maximum sales volume rank.

Multiple correlations for each were .42, .50, and .36, respectively. Route difficulty and tenure had multiple correlations of .27 and .30, respectively.

3. Route difficulty analysis showed that the drive factor carried the greatest weight; the best salesmen had the tougher routes.

4. The highest weight in tenure analysis was negative vocational satisfaction. This, in part, can be explained by the definition of vocational satisfaction as used in the study. Satisfaction infers that potential is yet to be reached. Tenure deals with length of time employed. The individuals with the most tenure were not striving to reach the top. They were coasting, so to speak.

COMMENTS

Some of the results may have been influenced by the fact that all the individuals were from one company. To the extent that the company, the nature of the product, company employment policies, etc., are not typical or representative of companies in general, the results may have been biased.

INTERVIEWING

193.

Contributions of the Interview to Assessment of Management Potential

Grant, D. L. and Bray, D. W. (1969)

What contribution does the interview make to the assessment of management potential?

POPULATION AND SAMPLE

The sample consisted of 348 male participants in a Bell System Management Progress Study. Of the total, 200 were college graduates. The remaining 148 were not college graduates, but they had been promoted to management positions early in their careers.

INSTRUMENTATION AND DATA

A professional psychologist (in most cases) gathered data through personal interviews with each individual. The interviews, which usually lasted two hours, were unstructured and informal. The participants were independently rated (by two graduate students in psychology) on each of 18 variables selected from a list of 25 used by the assessment center staff in their evaluations of the participants. The 18 variables were: personal impact (forcefulness), oral communication skills, human relations skills, personal impact (likeability), behavior flexibility, need approval of supervisors, need approval of peers, tolerance of uncertainty, inner work standards, primacy of work, energy, goal flexibility, need achievement, need security, social objectivity, Bell System value orientation (identification with the Bell System and its goals), ability to delay gratification, and range of interests.

DESIGN AND ANALYSIS

Each participant was rated on as many of the 18 variables as possible, using a 5-point scale. The scale was arranged from a low score of 1 to a high score of 5. The ratings were grouped according to educational level of the individual at the time of employment. The percentage of participants rated by both coders (graduate students in psychology) was computed for each variable in both samples.

The reliability of the coding procedure was determined by correlating the ratings of the two coders on each variable for the two sample groups (using only those variables coded by both). The Spearman-Brown prophecy formula was applied to the correlations. The ratings of the coders were then pooled. Totals, means, standard deviations, variances, and intercorrelations were computed for each variable. Correlations were made between the sum scores for each variable and assessment staff scores and progress in management as evidenced by salary increases.

RESULTS AND DISCUSSION

1. Both coders rated a higher percentage of college graduates than non-graduates for most of the 18 variables. The average percent of college graduates rated on each variable by both coders was 90%, as compared with only 79% for the non-graduate group. No explanation was found for the difference in rateability of the two groups.

2. Several variables were almost always rated for both sample groups: behavior flexibility, goal flexibility, primacy of work, need achievement, Bell System values, delay gratification, and range of interests.

3. Coder reliabilities of the ratings ranged from .73 to .92 for the college sample, and from .00 to .92 for the non-college sample.

4. The most reliable information for both samples was obtained on the variables of need of achievement, tolerance of uncertainty, social objectivity, and range of interests.

5. Analysis of variance revealed significant differences between the means of the two groups on eight of the variables. On five of the eight variables showing significant differences, the college group showed the higher mean (behavior flexibility, goal flexibility, need security, Bell System values, and delay gratification).

Intercorrelations between variables ranged from minus .52 to plus .71. Three clusters of intercorrelation were identified: (1) interpersonal skills (oral communication, personal impact, forcefulness, and human relations skills), (2) dependence upon others (needs for approval from supervisors and peers), and (3) work motivation (inner work standards, primacy of work, and energy).

6. Correlations between interview variables and variables reflecting staff judgments revealed several characteristics relevant to the purpose of the study: managerial skills, interpersonal relationships, general abilities, motives, values, and attitudes.

7. Correlations between interview variables and variables reflecting staff judgments (made independently of each other) were interpreted as being sufficiently high to conclude that the interviews can make substantial contributions to the effective assessment of management potential.

COMMENTS

Several of the procedures in the study do not seem to contribute to the investigation of the problem and, in fact, becloud the important findings. For example, the rationale for comparing college and non-college people (although it did reveal certain differences) did little, if anything, toward evaluating the interview procedure and results.

194.

Interviews: If at First You Don't Succeed . . .

Hakel, M. D. and Mannel, C. H. (1969)

How much inter-interviewer agreement can be obtained under arranged conditions?

POPULATION AND SAMPLE

Included in the sample were 21 campus interviewers visiting the University of Minnesota and 20 students from an introductory psychology class. (The report of the study included no further explanation of the sample or sampling techniques.)

INSTRUMENTATION AND DATA

The instrument consisted of "a special set of 24 resumes, each purporting to represent a business administration senior seeking employment as an accountant." The resumes contained various combinations of favorable and unfavorable information concerning scholastic standing, work experience, and interests and activities.

DESIGN AND ANALYSIS

Campus interviewers and students were both asked to evaluate each of the 24 resumes.

"The procedures used permitted a study concerning the relative importance of scholastic standing, work experience, and interests and activities as determiners of over-all evaluation." (No explanation of these procedures was provided in the report of the study.)

The interviewer evaluations were compared with student evaluations.

RESULTS AND DISCUSSION

1. "Interrater agreement in both groups was quite good."
2. "For the interviewers, agreement was about three times better than when live interviews were held with real applicants."
3. "For the students, interrater agreement was slightly poorer than for the interviewers, indicating that interviewing experience makes a difference. . ."
4. "The most important factor in an interviewer's over-all evaluations was scholastic standing. . .For the interviewers, grades were the dominant factor, and no degree of excellence in work experience or interests and extracurricular activities could make up for poor or even for average grades." The students did not emphasize grades to the extent that the interviewers did.

COMMENTS

In view of other findings, an interviewer who relies on scholastic standing, or any other single variable, to the same degree as those in this study probably would not be very successful in selecting the best people.

EVALUATION

195.

Relationship of Various College Graduate Characteristics to Recruiting Decisions

Carroll, S. J., Jr. (1966)

What are some of the characteristics of college graduates that affect recruiting decisions?

POPULATION AND SAMPLE

A short questionnaire was sent to all 211 males who graduated from the School of Business Administration at the University of Minnesota in December 1960 and in March, June, July, and August of 1961. Of the 158 questionnaires returned, 24 reported no interviews and 3 were improperly completed. The remaining 131 represent a 70% usable return.

"A comparison of respondents and non-respondents indicated that these two groups did not differ significantly (chi-square, $p > .05$) on any characteristic found to be related to a criterion of job seeking success."

INSTRUMENTATION AND DATA

Data pertaining to the variables studied were collected from each graduate's placement data sheet on file in the School of Business Administration. There were 19 variables or characteristics included in this study: age, appearance rank (handsomeness), grades, height, major field, marital status, fraternity membership, military or draft status, non-retail-sales experience, leadership positions in college, membership in college organizations, office-work experience, production-line experience, retail-sales experience, supervisory experience, work preference, wears glasses, weight, and height-weight ratio. Handsomeness was rated by three judges according to the Bittner and Rundquist (1950) ranking method. The final appearance score was an average of the three ratings. Test-retest reliability of rankings, based on a sample of 20, ranged from .97 to .87 (rank order).

Job-seeking success was based on the following criteria: (1) number of job offers received, (2) number of visit offers received, (3) proportion of visit offers to interviews, (4) proportion of job offers to visit offers, and (5) a total measure including all four criteria. No single criterion was acceptable since students displayed differing philosophies concerning job interviews—some interviewed all possible companies, while others were highly selective.

To derive the fifth score, the scores for each criterion were given according to the degree of success each student displayed in relation to the whole group on the first four success criteria. If the student was above the median for a criterion, he was given one point; if below, he was given no points. The scores were combined for each of the four criteria to obtain the over-all score which could range from 0 to 4 for each student.

DESIGN AND ANALYSIS

The characteristics were related to the five criteria scores to determine if any significant relationships existed. A correlation ratio (eta) was calculated for each significant relationship.

Intercorrelations among criteria ranged from .34 to .68.

RESULTS AND DISCUSSION

Only three of the 19 characteristics showed significant correlation (.05) to any of the job-seeking criteria. They were: appearance rank, marital status, and office experience. Appearance rank was correlated with number of visits, job visit ratio, and the combined criteria. Marital status was correlated only with number of job offers. Office experience correlated with number of job offers and visit-interview ratio.

COMMENTS

The results of this study were not consistent with other findings. Previous studies have indicated that grades played an important part in determining job-seeking success.

196.

Grades and Non-Technical Recruiting

Shell, C. I. (1967)

What degree of importance is attached to college grades in the campus placement interview by non-technical recruiters?

POPULATION AND SAMPLE

The sample included 290 employers seeking non-technical graduates on the Southern Illinois University campus at Carbondale. The 290 employers included only those who completed and returned a questionnaire (80% return).

INSTRUMENTATION AND DATA

The instrument used was a three-page questionnaire seeking information about marital status, self-financing in college, extracurricular activities, personality, and grades.

Respondents were asked to indicate the relative importance of grades in a forced-choice situation, and also to indicate what constituted acceptable grades, over-all, and in the major area.

The respondents were also asked to rank other factors considered in the placement interview, according to their relative importance.

DESIGN AND ANALYSIS

Grades were listed separately for each type of position for which recruiting was conducted. The classification of positions included: accounting, advertising, economics, design engineering, manufacturing engineering, finance, insurance, management trainee, marketing research, personnel, production, purchasing, and sales.

Results were scored using the following types of employers: manufacturers of durables; manufacturers of non-durables; insurance companies; accounting organizations; banking, credit, and finance companies; retail-wholesale organizations; transportation and utilities companies; service institutions; and miscellaneous companies.

RESULTS AND DISCUSSION

1. Ranking of the importance of the various factors showed grades to be first in importance, followed by personality, extracurricular activities, and self-financing through college, in that order, when rankings from all employers and all job functions were included.
2. Ranking of factors, according to type of employer, showed that manufacturers of durables, transportation and utilities companies, and service institutions considered personality more important than grades in the interview.
3. Employers were asked to designate the letter grade (A through C–) he most desired for each of the functional areas (positions), in the major area, and over-all grade point average.

The median grade in the major field desired by employers was B+, and the median over-all grade point was B. The median minimum acceptable grades in the major field and over-all grade point were C+ and C, respectively. Functional areas or positions showed different desired grade levels by types of employers. For the group as a whole, accounting, economics, design engineering, and finance rated the highest grades. Production and sales had the lowest grades desired.

4. Employers in general use grades as a screening device and, in most cases, they require good grades, especially in the major area. Some employers disregard grades and use only results of their company tests.

COMMENTS

The results show that most employers use grades in connection with other variables as a criterion for employment. The desired grade levels do not appear to be unusually high or unusually low. It could be expected that grades would not be as important in non-technical recruiting as in highly technical recruiting.

WORK FORCE

TURNOVER

197.

Attitudes, Values, and Goals of Technical Terminees

Anonymous (1964) Study #6

What are the attitudes, values, and goals of technical staff members who terminate employment with a large research and development corporation?

POPULATION AND SAMPLE

The sample included the technical staff members who terminated employment with one research and development corporation between September 1963 and June 1964. A total of 99 technical staff members terminated their employment during this time, but only 89 of these responded to the questionnaire and were included in the study.

INSTRUMENTATION AND DATA

On the last day of employment, the terminees were asked to complete an attitude, value, and goal survey. The instrument was group-administered and efforts were made to insure anonymity. The survey included 68 statements related to attitudes toward the position resigned. The terminees were asked to agree or disagree with each statement. One section required the terminees to rate the importance of specific values and goals.

DESIGN AND ANALYSIS

Results were presented as percentages of terminees responding to each item either in agreement or disagreement. Percentages of terminees who listed each statement as important or unimportant were reported also.

RESULTS AND DISCUSSION

1. The terminees appeared to be dissatisfied with an inadequate work load and lack of challenge in assignments. The data indicate that the terminees were promotion-oriented and felt that their goals could not be reached by staying with the company.

2. The most important values and goals reported by the terminees were professional accomplishment and personal pride. The least important values and goals reported were desire to be well-thought-of by superiors, money and what it will buy, and desire to win respect of co-workers.

COMMENTS

None.

198.

1967 College Graduate Employee Quit Study

Anonymous (1968)

What are the reasons given by college graduates for leaving employment with a large manufacturing company?

POPULATION AND SAMPLE

A questionnaire was mailed to approximately 2,000 college graduates who had quit their position with a large manufacturing company during the 12-month period ending June 30, 1967. Sixty-two percent responded to the questionnaire. (No further description of the sample or population was included in the report of the study.)

INSTRUMENTATION AND DATA

The questionnaire was designed to measure attitudes toward employment at the company.

The respondents were asked to select from a list of 13 job factors the 4 factors which they considered to be of greatest importance in the job situation. The factors included: benefits, co-workers, work organization, salary, intangible rewards, advancement opportunities, challenging work, training, working conditions, personal contributions, professional recognition, authority to do their job, and relationship with supervisor.

DESIGN AND ANALYSIS

The 13 job factors were put in rank-order according to the percent of respondents who selected each factor. The responses were classified into 11 general job characteristics: benefits, fellow workers, equipment and working conditions, work organization, authority and responsibility, immediate supervisor, recognition, orientation-training, salary, intangible rewards, and opportunities for advancement. Average ratings were also determined for the 11 characteristics using a 5-point scale where 1 corresponded to very satisfied and 5 to very dissatisfied.

The average rating of the 11 job characteristics determined for respondents in 1967 were compared to the ratings on the same 11 characteristics for another group who quit their positions with the company in 1959. (No description of the 1959 group was included in the report of the study.)

Comparisons were made between the rank-order of each factor and the satisfaction rating of the corresponding job characteristic. This comparison was designed to estimate the extent to which a given factor contributed to an employee's decision to leave; for example, high rank-order position and low-satisfaction rating would indicate that that one factor significantly influenced the decision to leave the company.

RESULTS AND DISCUSSION

1. Results showed that 92% of those who left had good, very good, or outstanding performance ratings.

2. Eighty-three percent of those who left had been given good, very good, or outstanding long-range potential ratings.

3. Satisfaction ratings showed the respondents were well satisfied with job benefits, fellow workers, and work organization (rated less than 2.0 on the 5-point scale). The respondents were less satisfied with salary, intangible rewards, and advancement opportunities (satisfaction ratings between 3.0 and 3.7 on the 5-point scale).

4. Comparisons of the satisfaction ratings for the 1967 sample and the employees who quit in 1959 showed consistently less satisfaction on each characteristic for the 1967 sample. The differences were slight, usually only .1 or .2.

5. The top three ranked job factors were challenging work, opportunities for advancement, and good salary. These were the only three factors mentioned by at least 50% of the subjects.

6. Job factors relating to the individual's ability to fulfill his job responsibilities (working conditions, work associates, training, and performance reviews) were found to be low contributors to the decision to quit.

7. Job factors related to the department (organization and management of work, authority per job responsibility, relationship with supervisor, personal contributions, and professional recognition) contributed moderately to the decision to quit.

8. In comparison called "fairness of salary per job responsibilities," people who had been with the company the longest were less satisfied with their salary.
9. Job factors related to pay (salary and benefits) showed a varied contribution to the decision to quit—salary rated medium to high as a contribution, while benefits rated low.
10. Job factors related to work content (nature of the work and opportunities for advancement) showed a high contribution to the decision to quit.

COMMENTS

The loss of good, very good, or outstanding employees with high potential is a problem which needs an immediate and complete solution. The concomitant observations that the major sources of discontent are unmet desires for more recognition (higher salaries, greater advancements, more authority, and personal recognition) suggest the need for more formal and informal recognition and reward for merit.

199.

Who Leaves? A Study of Background Characteristics of Engineers Associated With Turnover

Meyer, H. H. and Cuomo, S. Q. (1962)

What are some of the background characteristics that distinguish between engineers who stayed and those who left the General Electric Company?

POPULATION AND SAMPLE

The population was defined as 1,360 recent college graduate engineers hired for the Engineering and Technical Marketing Training Programs at General Electric Company during 1954, 1955, and 1956.

The results of an annual survey, conducted by the accounting department for the purposes of salary administration, revealed that 720 of the original 1,360 engineers (53%) were still employed by General Electric in 1961. Those 720 engineers were referred to as "stays." The 640 engineers who had left the company by the end of 1961 were referred to as "gones."

INSTRUMENTATION AND DATA

As part of their orientation program, all new engineers with G.E. were required to take a battery of tests, which included measures of general ability, verbal reasoning, mathematical ability, engineering knowledge, and spatial relations. (The titles of these instruments were not supplied in the report of the study.) They were also asked to provide background information, such as college class standing and college activities. The data included recruiter ratings of each student.

Additional biographical information used in this study included: marital status, military service, home address, geographical preference, number of previous jobs, percent of college education costs earned, and expressed work interest. Each new engineer was personally interviewed and evaluated on the basis of 50 different ability and personality traits, such as agressiveness, self-confidence, originality, emotional stability, sincerity, maturity, and strength of job identification.

DESIGN AND ANALYSIS

Tests of significance were made between the "stay" and "gone" groups on the selected items listed above. The 5% level of confidence was established as the acceptable level. Differences that were found to be not quite significant at this level were referred to as trends or tendencies.

RESULTS AND DISCUSSION

1. Personal history data revealed significant differences between the two groups. The "gones," as a group, had participated in more extracurricular campus activities while in college, were more likely to have held positions of leadership on campus, less likely to have had military service before being employed (military service would possibly account for some turnover), and were more likely to have been single. There was also some trend for the "gones" to have been given higher ratings from the interviewers.
2. There were no significant differences between the two groups in terms of academic performance, geographical preferences, number of previous jobs, percent of college education costs earned, and expressed work interests.
3. Significant differences were found between the two groups on several tests. The "stays" scored higher on mechanical comprehension and spatial relations tests than did the "gones." A higher percentage of the "stays" were found at the top end of the distribution for educational breadth scores.
4. There were significant differences between the two groups on several ability and personality traits, as measured by interviewers' ratings. The "gones" were significantly higher on aggressiveness, self-confidence, originality, and general information. The "stays" were rated significantly higher on emotional stability, practical-technical know-how, sincerity, maturity, and strength of job identification.
5. Differences between the two groups were found on several biographical inventory items. The "stays" had a higher percentage who majored in electrical engineering, preferred laboratory work over classroom lectures, spent less time in recreational reading and more time reading professional journals, had fewer published papers, aspired to a higher level job in the engineering function as opposed to administrative responsibilities.
6. Results showed that in 1958, 880 of the original 1,360 engineers (65%) were still employed by the company. The next three years accounted for only an additional 12% loss, compared to 35% for the first three years (average).
7. ". . . the study findings would seem to have more important implications for the improved utilization of engineers than for improved selection."

COMMENTS

This follow-up study provided a description of the conditions that existed within a particular company. Thus, only to the extent that other situations are similar can these results be generalized.

It may be a general trend, however, that those engineers most likely to leave were more aggressive and self-confident, and had a past history of campus leadership and activity. In general, this group was less settled and apparently more venturesome, with less identification with engineering. It may be that they left the company because access to other types of positions within the company was not as easy as it was to change companies.

200.

An Analysis of Turnover Among Recent University Graduates

University and College Placement Association
(1965-1969)

What factors are associated with job turnover among college graduates?

POPULATION AND SAMPLE

Questionnaires were sent to 149 members of Canada's University and College Placement Association. The actual response was 62 (41.6%); however, only 52 of the replies contained complete information and were included in the study. (No further explanation of sampling was provided in the report of the study.)

INSTRUMENTATION AND DATA

Data were gathered using a questionnaire designed to investigate reasons for and conditions connected with employee turnover. Such factors as challenging work, quality of training, education, salary, benefits, and amount of responsibility, among others, were assessed.

DESIGN AND ANALYSIS

Responding companies were grouped according to size, industrial classification, and function. Responses were tabulated by groups.

A multiple-regression analysis was made of cumulative turnover data in an attempt to construct a model for the prediction of turnover using variables such as: (1) number of graduates originally hired, (2) percentage of turnover in group during first year, and (3) percentage of turnover in group during third year. The turnover data were available for graduates hired during 1965, 1966, and 1967. Each year provided 13 sets of data (3 for size of employing company, 4 for industrial classification, and 6 for function) for a total of 39.

RESULTS AND DISCUSSION

1. Results of a multiple-regression analysis showed that turnover during the first year was a significant predictor of cumulative 3-year turnover for all groups (.05).
2. Five reasons for turnover appeared most frequently in the responses: bigger job, discharged, dislike job, return to school, and other reasons.
3. The average rate of turnover for the three-year periods was 39.6%. The greatest percentage left their company during the second year.
4. Monetary reasons were not a factor in turnover. Education and more challenging work seemed to be the prominent reasons.
5. Important factors suggested in the report for reducing turnover included: improvement of training, more responsibility, and improved communications.

COMMENTS

The rate of return (41.6%) was a rather low percentage, and may lead to sample bias. The companies responding may have been overly concerned with turnover due to large numbers leaving their ranks.

TENURE

201.

A Seven Year Follow-Up Study of Engineering Personnel

Lockheed-California Company (1962)

What factors can be identified and used as predictors of tenure and success for engineers?

POPULATION AND SAMPLE

The population included 332 engineering personnel hired by Lockheed-California Company between May and August of 1955. Approximately 60% of the group were hired as associate engineers. All of the associate engineers, and about 50% of the remaining engineers were college graduates. None of the personnel working on an hourly basis had degrees from accredited engineering schools. Approximately 86% of the employees were between the ages of 21 and 35 years.

INSTRUMENTATION AND DATA

All employees were administered the Engineering Comprehensive Test Battery which was composed of 13 tests and yielded 16 test scores. The battery included: the Employee Aptitude Survey (verbal comprehension, numerical ability, visual speed and accuracy, space visualization, numerical reasoning and logical reasoning scales); Industrial Aptitude Survey (figure analogies and spatial orientation); the Guilford-Zimmerman Aptitude Survey (spatial visualization); experimental reasoning tests (circle reasoning and correlate completion); the Ship Destination Test; and others. The battery of tests took about four hours to complete.

Additional data were collected from company records and the employee's reports of his own success in engineering.

DESIGN AND ANALYSIS

Comparisons were made between mean test scores of the salaried and hourly wage personnel, and the *t* test of significance was applied to the differences.

A criterion measure was tenure with the company. Of the total population, 71% (235) left the company within the seven-year period. Coefficients of correlation between test scores and this criterion of tenure were computed, and the *t* test of significance was applied to the correlation coefficients.

(Intercorrelations between the measures were also computed, but they were not reported in this abstract.)

"Both salary increase and percent salary increase were used as criterion measurements." Correlations between test scores and criteria were computed and tested for significance.

Comparisons were made between test scores of those who left the company and those employed at the time of this study.

RESULTS AND DISCUSSION

1. Age at the time of testing was related to test scores. The scores most influenced by age (using the total sample) were: verbal correlate completion, spatial orientation, correlate completion total, and the Guilford-Zimmerman, in that order. Least influenced by increased age (arranged in ascending order) were: mental ability, verbal comprehension, mechanical comprehension, and circle reasoning.

2. Significant positive correlations were reported between tenure and the following: verbal comprehension (.05), numerical ability (.05), space visualization (.05), mechanical comprehension (.01), and circle reasoning (.01).

3. Significant negative correlations were reported between tenure and the following: logical reasoning (.01), mental ability (.01), spatial orientation (.01), and spatial visualization (.01).

4. Spatial orientation and spatial visualization showed an intercorrelation coefficient of .64, compared to coefficients of .40 for each, when correlated with space visualization. "It would appear that essentially two kinds of spatial abilities were being measured by the three tests."

5. Significant positive correlations were found between salary increase criteria and the following: numerical ability (.05), visual speed and accuracy (.05), space visualization (.01), numerical reasoning (.01), mental ability (.05), figure analogies (.01), spatial orientation (.01), spatial visualization (.01), and mechanical comprehension (.01). No negative correlations appeared between the independent variable and the salary increase criteria.

6. Salaried personnel score significantly higher than hourly wage personnel on the verbal comprehension, numerical ability, and mental ability tests. The opposite was true for spatial orientation.

COMMENTS

Some inconsistencies in the data are puzzling. Why should space visualization correlate positively with tenure, while spatial visualization correlates negatively with the same criterion? This may be an error. If not, the validity of the two tests must be questioned (one, or both, must be invalid).

Appendix

Sources of Research Studies

Sources from which research studies were sought and obtained included the following:

1. Colleges and university libraries. This included library collections in such areas as Guidance and Counseling, Industrial Psychology, Industrial Sociology, Administrative Sciences, Psychology, Sociology, Industrial Relations, Industrial Management, and/or Counseling Psychology.
2. Indexes (e.g., Education Index, Current Index to Journals in Education, etc.)
3. Companies (approximately 315 companies identified as conducting and/or participating in research relevant to the general topic were contacted.)
4. Associations, Bureaus, Centers, Commissions, Departments, Institutes, and Offices (representing such areas as consulting, education, foundations, placement, professional organizations, and research) were identified as conducting, sponsoring, and/or participating in research relevant to the general topic. Over 50 were contacted.
5. Educational Resources Information Center (ERIC). This center provides a national information system. The basic source list for the system includes more than 500 major educational and related publications (journals, quarterlies, annuals, and yearbooks). All articles (excluding book reviews and letters to the editor) are indexed for many of the journals.
6. Both *Psychological Abstracts* and *Sociological Abstracts* were searched for pertinent articles. These sources contain abstracts of articles from hundreds of journals.
7. Other journals, periodicals, and related sources which were not in the ERIC system, *Psychological Abstracts*, or *Sociological Abstracts* were also searched. These sources included such publications as *Administrative Management, Management Bulletins, Management Reports, Management Review, Management Research Monthly Labor Review, Personnel, Personnel Administration, Supervision, etc.*

The key words (descriptors) and subject index terms which were used to search for relevant studies contained in ERIC, *Psychological Abstracts*, and *Sociological Abstracts* included the following: academic, aspiration, career, college, counseling, development, education, employment, graduates, interest, interview, job, manpower, occupation, personnel, placement, post high school, recruitment, selection, vocation, work, etc. To provide some assurance that important articles were not omitted by use of the key-words approach, or because they were not indexed, a volume-by-volume search was made of the journals most closely related to the general topic.

Index by Subject Classifications

THE INDIVIDUAL

Includes student, graduate, employee, trainee, executive, manager.

Career Choice, Planning, Development (during college)

Choice (decision-making):

Curriculum (major); career; vocational (occupational); factors related to choice and change of decision; satisfaction and dissatisfaction with choice.

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3. ANDERSON, H. E., Jr. and Barry, J. R. "Occupational Choices in Selected Health Professions." *Personnel and Guidance Journal*, 1965, 44 (2), 177-184 2

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(See—INDIVIDUAL-Training—116) 80

APOSTAL, R. A. (1968)
(See—INDIVIDUAL-Vocational Interests—49) 35

ASHBY, J. D., Wall, H. W., and Osipow, S. H. (1966)
(See—INDIVIDUAL-Characteristics—36) 26

ASTIN, A. W. (1965)
(See—INDIVIDUAL-Occupations—95) 65

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BAIRD, L. L. (1967) Study #2
(See—INDIVIDUAL-Characteristics—38) 28

BATEMAN, T. and Roe, A. (1966)
(See—INDIVIDUAL-Employment—124) 86

BRUNKAN, R. J. (1965)
(See—INDIVIDUAL-Self-Perception—80) 54

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(See—INDIVIDUAL-Occupations—96) 66

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(See—INDIVIDUAL-Abilities—78) 53

FOREMAN, M. E. (1968)
(See—INDIVIDUAL-Self-Perception—81) 55

GARBIN, A. P. (1967)
(See—INDIVIDUAL-Occupations—97) 67

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